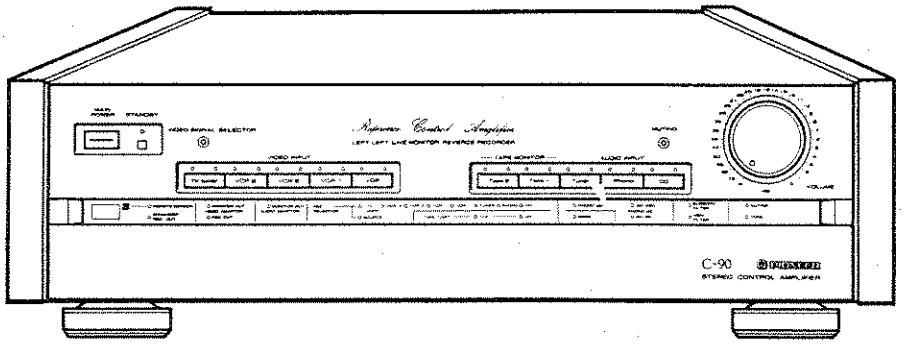
SPARE PARTS MASTER

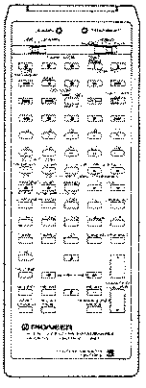
Operating Instructions

STEREO CONTROL AMPLIFIER

C-90S

The C-90S is equipped with the audio/video programmable remote control unit. The "S" at the end of the model number indicates that a programmable remote control unit is supplied. The panel itself says C-90.





Thank you for buying this Pioneer product.
Please read through these operating instructions so you will know how to operate your model properly. After you have finished reading the instructions, put them away in a safe place for future reference.
In some countries or regions, the shape of the power plug and power outlet may sometimes differ from that shown in the explanatory drawings. However, the method of connecting and operating the unit is the same.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT NOTICE

[For U.S. and Canadian models]

The serial number for this equipment is located on the rear panel. Please write this serial number on your enclosed warranty card and keep it in a secure area. This is for your security.

[For Canadian Model]

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

LINE VOLTAGE SELECTOR SWITCH

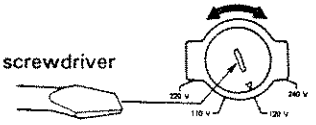
Only multi-voltage models are provided with this switch. U.S., Canadian, European, U.K., and Australian models are not provided with this switch. Mains voltages in Saudi Arabia are 127V and 220V only.

Never use this model with 110V setting in Saudi Arabia.

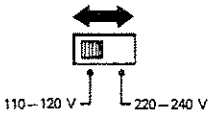
The line voltage selector switch is on the rear panel. Before your model is shipped from the factory, this switch is set to the power requirements of the destination. Check that it is set properly before plugging the power cord into the AC outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows.

1. Use a medium-size screwdirver.
2. Insert the screwdriver into the groove on the voltage selector, and adjust so that the tip of the arrow points to the voltage value of your area.

Medium-size screwdriver



3. Set the voltage selector switch for the voltage in your area.



PIONEER
The future of sound and vision.

IMPORTANT 1

The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT 2

If the apparatus is fitted with AC mains power outlet(s), see REAR PANEL FACILITIES for convenient connection of additional Hi-Fi component(s). Make all connections to the AC outlet(s) and the signal terminals first. Connect the plug to the wall socket last, make sure that the power switch is off.

FOR USE IN THE UNITED KINGDOM

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured marking identifying the terminals in your plug proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.
Equipment sold in the U.K. is not supplied with a power plug.

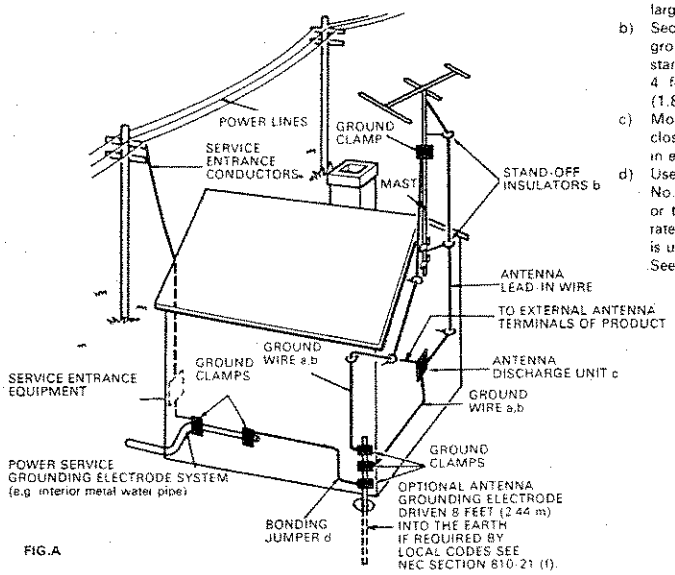
SAFETY INSTRUCTIONS

READ INSTRUCTIONS — All the safety and operating instructions should be read before the appliance is operated.
RETAIN INSTRUCTIONS — The operating instructions should be retained for future reference.
HEED WARNING — All warnings on the appliance and in the operating instructions should be adhered to.
FOLLOW INSTRUCTIONS — All operating and use instructions should be followed.
WATER AND MOISTURE — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
LOCATION — The appliance should be installed in a stable location.
WALL OR CEILING MOUNTING — The appliance should not be mounted to a wall or ceiling.
VENTILATION — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
HEAT — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
POWER SOURCES — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
POWER-CORD PROTECTION — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
POLARIZATION — If your purchased product is provided with a polarized power plug, please read the following instructions. This product is equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
CLEANING — The appliance should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the cabinet.
POWER LINES — An outdoor antenna should be located away from power lines
NONUSE PERIODS — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
OBJECT AND LIQUID ENTRY — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
DAMAGE REQUIRING SERVICE — The appliance should be serviced by a Pioneer authorized service center or qualified service personnel when:

- The power-supply cord or the plug has been damaged; or
- Objects have fallen, or liquid has been spilled into the appliance; or
- The appliance has been exposed to rain; or
- The appliance does not appear to operate normally or exhibits a marked change in performance; or
- The appliance has been dropped; or the enclosure damaged

SERVICING — The user should not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, contact the nearest Pioneer authorized service center.

OUTDOOR ANTENNA GROUNDING — If an outside antenna is connected to the antenna terminal, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges.
In the U.S.A. section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Fig. A.


POWER LINES
GROUND CLAMP
SERVICE ENTRANCE CONDUCTORS
MAST
STAND-OFF INSULATORS b
ANTENNA LEAD-IN WIRE
TO EXTERNAL ANTENNA TERMINALS OF PRODUCT
GROUND WIRE a,b
GROUND CLAMPS
ANTENNA DISCHARGE UNIT c
SERVICE ENTRANCE EQUIPMENT
GROUND WIRE a,b
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (e.g. interior metal water pipe)
OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44 m) INTO THE EARTH IF REQUIRED BY LOCAL CODES SEE NEC SECTION 810-21 (f).
BONDING JUMPER d
FIG.A

a) Use No. 10 AWG (5.3 mm^2) copper, No. 8 AWG (8.4 mm^2) aluminum, No. 17 AWG (1.0 mm^2) copperclad steel, bronze wire, or larger as ground wire.
b) Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
c) Mount antenna discharge unit as closely as possible to where lead-in enters house.
d) Use jumper wire not smaller than No.6 AWG (13.3 mm^2) copper, or the equivalent, when a separate antenna-grounding electrode is used.
See NEC Section 810-21 (j).

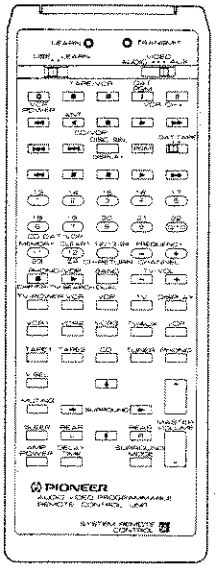
CONTENTS

Before Using the Unit 3
Features 4
Precautions During Use 4
Connections 5
Remote Control Operation 8
Remote Control Unit 9
Use of Learning Functions 17
Panel Facilities 20
Operations 1 (Basic Operations) 25
Operations 2 (Applications) 28
Troubleshooting 31
Specifications 32

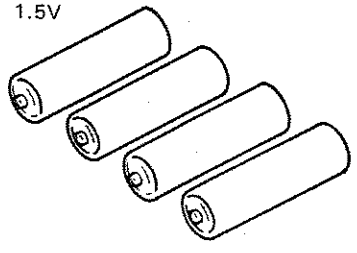
BEFORE USING THE UNIT

Accessories

- Remote Control Unit 1



- "AAA" size IEC LR03 (AM-4) alkaline dry cell batteries 4



- Templates added 2
- Pin-Plug cord 1

INFORMATION TO USER [FOR U.S. MODEL]

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply ;with the limits for a Class B computing device in accordance with the specifications in Subpart J of Par 15 of FCC Rules, which are designed to provide reasonable protection against such interferenbce in a residential installation. However, therre is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate this equipment with respect to the receiver
- move this equipment away from the receiver
- plug this equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an expaerienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commision helpful:
"How to Identify and REsolve Radio-TV Interference Problems".
This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.
The above instructions apply only to units which will be operated in the United States.

FEATURES

MONO-CONSTRUCTION

Independent power transformers are provided for left and right channels, with an additional transformer for control and display functions. This three-transformer design prevents deterioration of sound due to interference between channels.

HYBRID MC TRANSFORMER

The MC transformer winding ratio between reduced (1/2 of previous Pioneer models), thus improving low-frequency and high-frequency MC transformer response.

VIBRATION-RESISTANS DESIGN

In order to eliminate sound deterioration from vibration, the amplifier's supporting legs have been made from special resin material, and pure aluminum has been used for the volume control knob.

ELECTRONIC CONTROL

Signal switching is performed by relays and electronic switches in order to shorten the signal path, thus reducing noise and improving separation and other characteristics.

HIGH-SOUND-QUALITY MOTOR DRIVE VOLUME CONTROL

Volume control is performed by motor drive, thus reducing distortion.

HIGH-FIDELITY PARTS

All parts, from circuit boards to resistors, capacitors, semiconductors, and wiring, have been specially developed for high-fidelity audio applications. In addition, a copper-plated chassis has also been adopted for even greater sound quality.

FULL VIDEO FUNCTIONS

In addition to five (plus one adapter) audio inputs, five (plus one adapter) video input terminals have also been provided. In addition, a REC selector and enhancer function have also been built into the video system.

AV REMOTE CONTROL UNIT WITH LEARNING FUNCTIONS

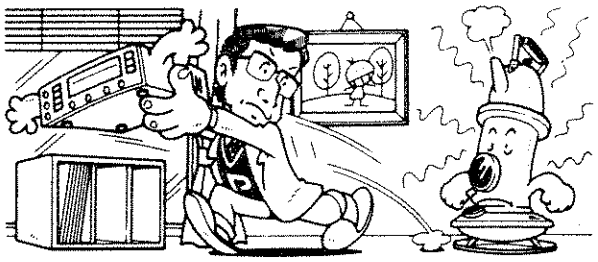
With the attached remote control unit you can operate any Pioneer audio or video component bearing the 5R mark. And with additional learning functions the whole AV surround system including TV and VCR of other makers can be controlled. (Some makers' remote control systems, however, are not suitable for programming.)

PRECAUTIONS DURING USE

ABOUT INSTALLATION

Avoid high temperature and humidity, and allow sufficient ventilation.

Excessive heat can adversely affect internal parts. Avoid locations exposed to direct sunlight or the heat from a space heater or other heating appliance. Also, malfunctions may aresult if the unit is installed in locations with high-humidity or high concentrations of dust. (Also avoid kitchen installations or other locations exposed to oily smoke, steam, or heat.)



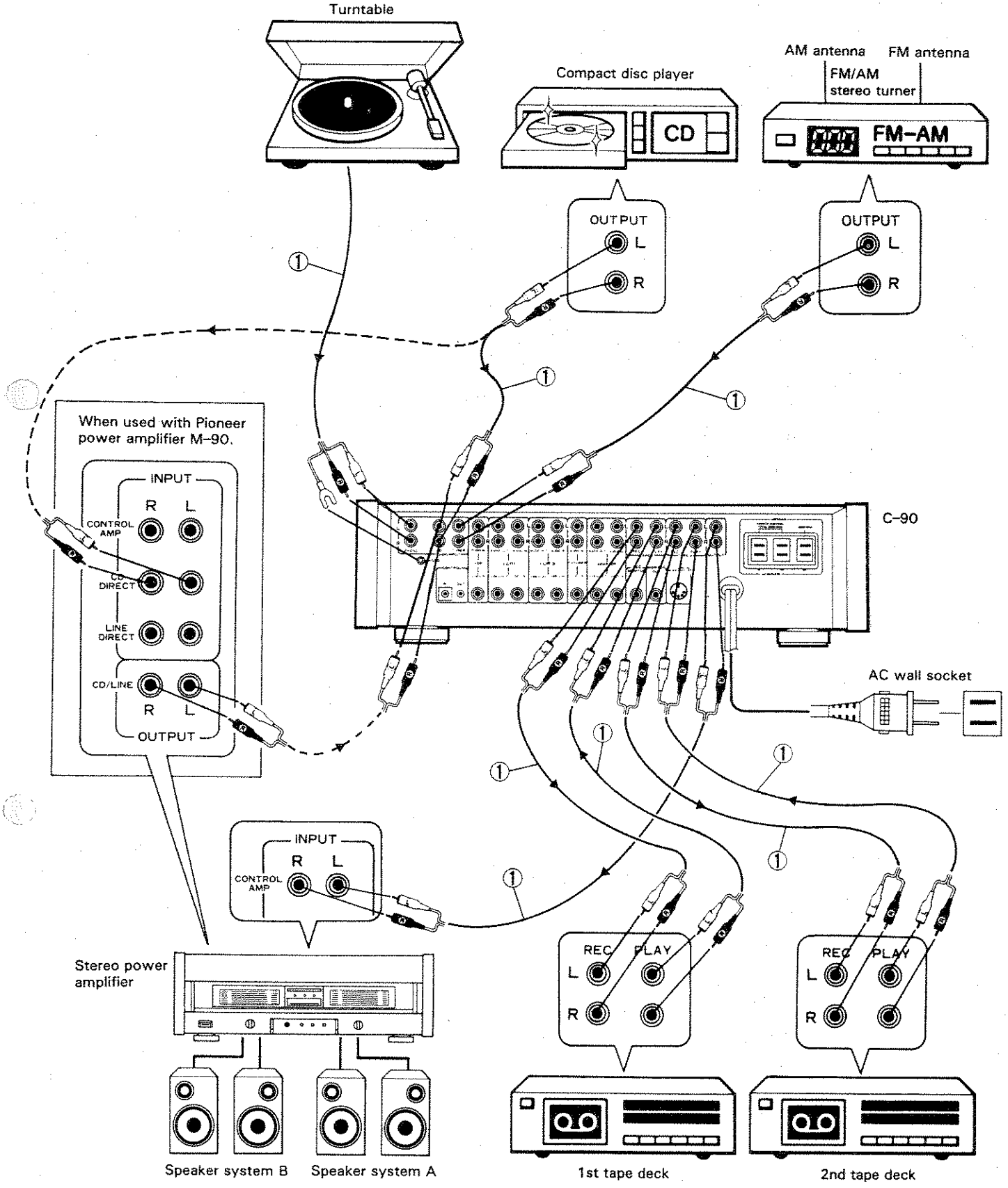
PRECAUTIONS FOR INSTALLATION

To ensure optimum sound quality, observe the following precautions:

- This unit is heavy. Be sure to install it on a firm base which can support its weight. Also, to prevent the flow of cooling air from being blocked off, do not place the unit on soft material such as a carpet or cushion, or install it in a confined space. When installing the unit in a rack, provide adequate space around it to allow heat to dissipate.
- To prevent the control amplifier from picking up noise due to leakage flux from the power amplifier when the control amplifier and power amplifier are installed adjacent to each other, install the control amplifier on the right of the power amplifier. Also, if you install the control amplifier above or below the power amplifier, place a partition between them to separate them by at least 10 cm from each other.
- Install the unit on a level surface so that the feet of the unit are all touching the installation surface.

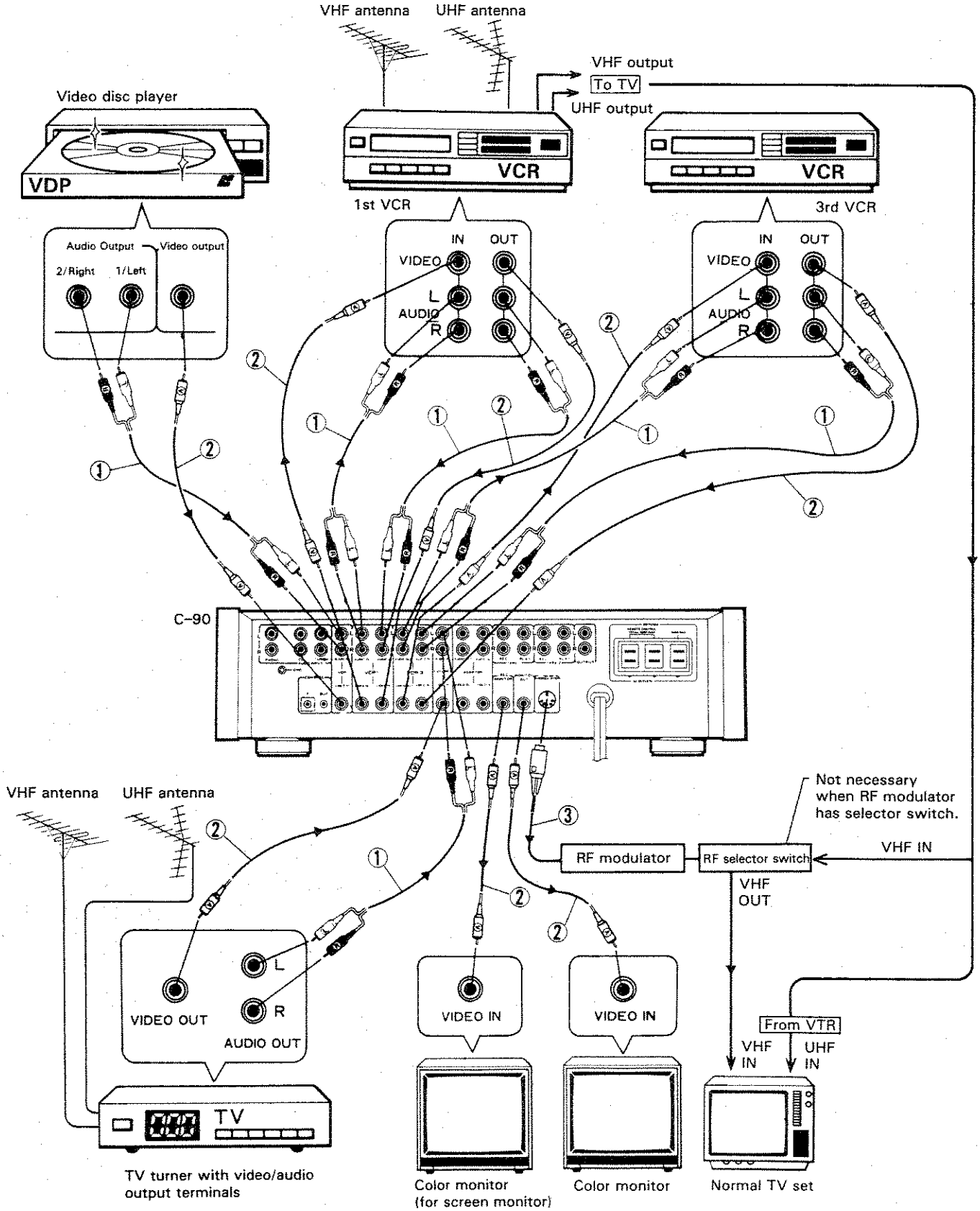
CONNECTIONS

AUDIO COMPONENT CONNECTIONS



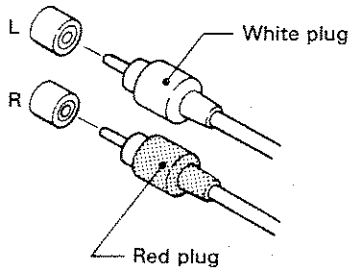
VIDEO COMPONENT CONNECTIONS

* Terminals for a second VCR unit are located inside the front panel door.



■ Connecting Audio Input/Output Cords (see ① in connection diagrams)

- Use the red/white pin-plug cords.
- Connect the white plug to the L(left) channel and the red plug to the R(right) channel. Be sure to insert the plugs into the terminals fully.

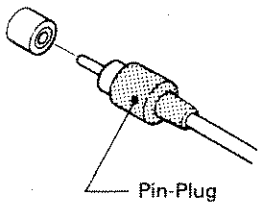


NOTES:

- *Short pin plugs (14 in all) are fitted to each of the AUDIO IN terminals for PHOTO, CD, TUNER, VDP, VCR1, VCR3, and TV TUNER to improve sound quality. Remove these when making connections.*
- ***Keep short pin plugs in a safe place. Do not insert in the REC, AUDIO OUT or VIDEO IN, OUT terminals.***
- ***Replace short pin plugs in the terminals from which have they were removed when the terminal becomes vacant.***

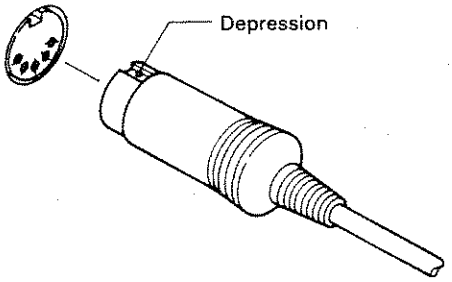
■ Connecting Video Input/Output Cords (see ② in the connection diagrams)

- Use pin-plug cords.
- Be sure to insert the plugs into the terminals fully.



■ Connecting an RF Modulator (see ③ in the connection diagrams)

- Use an RF modulator designed for use with MSX personal computers.
- Use a cord with 5-pin DIN plug.
- Align the depression on the plug with the guide on the terminal and insert securely.



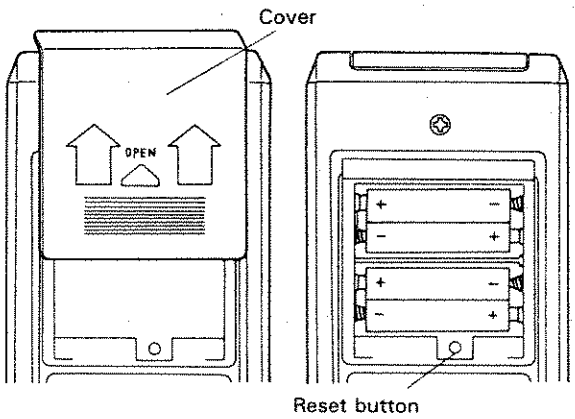
■ About the polarity of auxiliary AC power outlets:

The auxiliary power outlets on this unit have marks indicating the polarity of the outlet. When connecting other stereo components, if those components have been designed with specific power polarity, be sure to connect the power cords in accordance with the manufacturer's instructions in order to achieve better sound quality. The negative (ground) side of the rear panel outlets are indicated by a dot mark (●).

REMOTE CONTROL OPERATION

LOADING BATTERIES

1. Open the battery compartment cover on the rear of the remote control unit. The cover should open easily if you slide it in the direction of the arrow while pressing on it with your thumb.
2. Take out the four supplied alkali (LR03/AM–4) batteries, and insert them into the battery compartment in accordance with the indications in the compartment.
3. Close the cover of the battery compartment.



Incorrect use of batteries may lead to leakage or rupture. Always be sure to follow these guidelines:

A.

Always insert batteries into the battery compartment correctly matching the positive (+) and negative (−) polarities, as indicated inside the compartment.

B.

Never mix new and use batteries.

C.

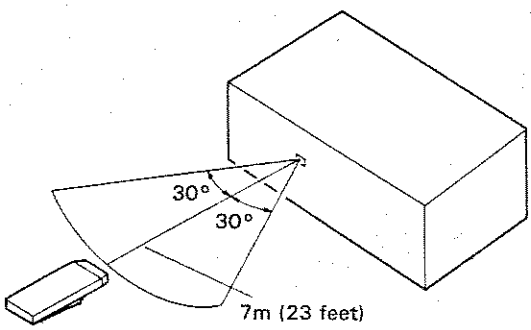
Batteries of the same size may have different voltages, depending on their type. Do not mix different type of batteries.

D.

Both rechargeable and non-rechargeable batteries are available. Be sure to use your batteries in accordance with the caution labels affixed to them.

RNAGE OF REMOTE CONTROL

When operating the remote control unit, point the front of the unit at the front panel of this unit. The remote control unit may be used within a range of about 7 meters (23 feet) from the remote sensor, within angles of up to about 30 degrees.
These figures are general and do not necessarily apply to learned commands.



Battery Replacement

When the batteries have run out, the transmit indicator will not illuminate even when a key is pressed. Be sure to replace the batteries as soon as possible. As the programmed functions will be retained in memory only as long as batteries are insereted, remove the old batteries only if they can be replaced by new ones immediately.
Also, be sure to always use the specified dry cell batteries (IEC LR03/AM–4 alkaline batteries).

NOTE:
When no batteries are inserted, the programmed memory contents will be erased after 30 to 60 minutes.

REMOTE CONTROL UNIT

FUNCTION OF THE TRANSMIT MODE SELECTOR SWITCH

AUDIO:

Select this position for remote control operation of audio equipment such as CD player, tape deck, DAT deck, turntable or tuner.

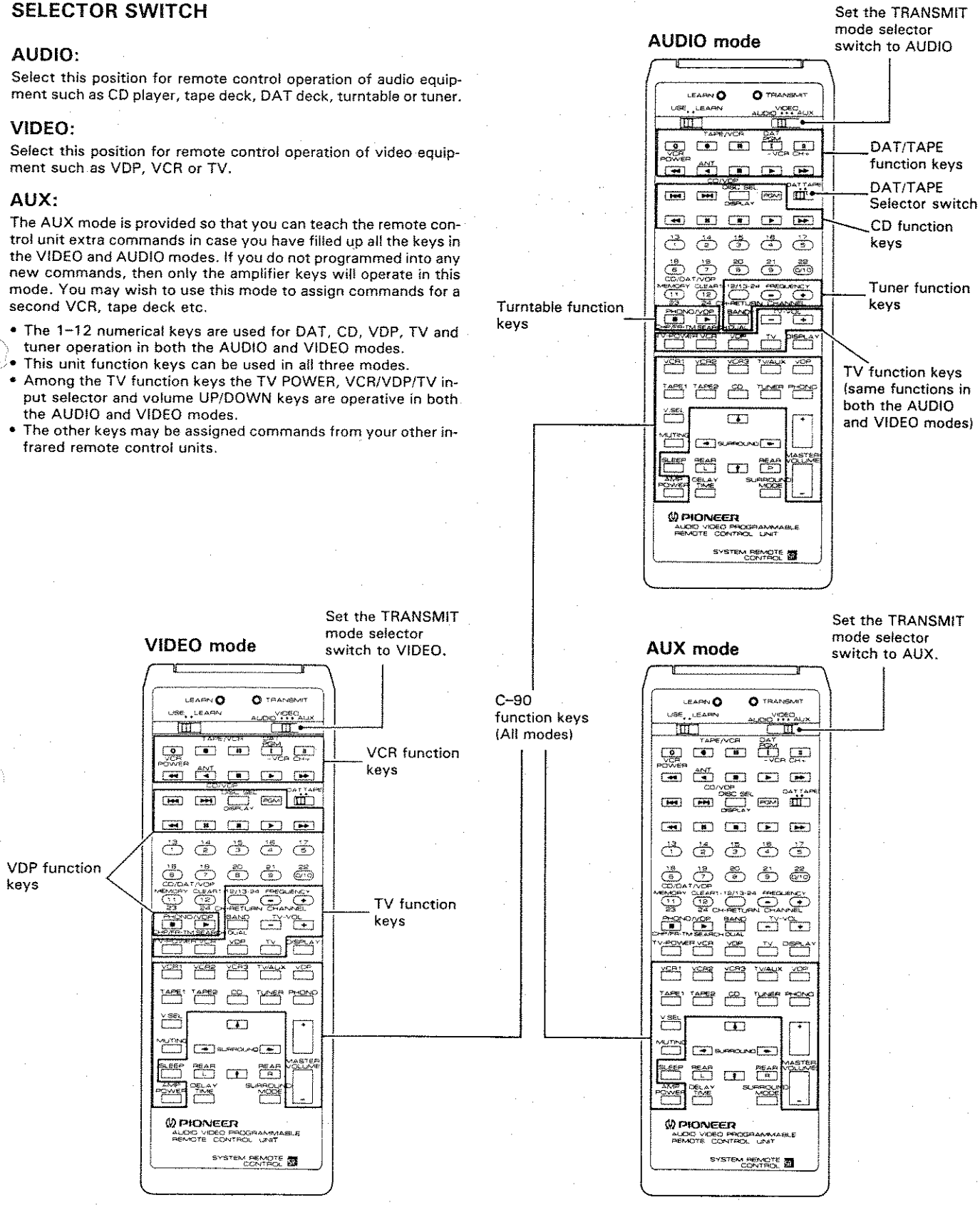
VIDEO:

Select this position for remote control operation of video equipment such as VDP, VCR or TV.

AUX:

The AUX mode is provided so that you can teach the remote control unit extra commands in case you have filled up all the keys in the VIDEO and AUDIO modes. If you do not programmed into any new commands, then only the amplifier keys will operate in this mode. You may wish to use this mode to assign commands for a second VCR, tape deck etc.

- The 1–12 numerical keys are used for DAT, CD, VDP, TV and tuner operation in both the AUDIO and VIDEO modes.
- This unit function keys can be used in all three modes.
- Among the TV function keys the TV POWER, VCR/VDP/TV input selector and volume UP/DOWN keys are operative in both the AUDIO and VIDEO modes.
- The other keys may be assigned commands from your other infrared remote control units.


AUDIO mode
Set the TRANSMIT mode selector switch to AUDIO
DAT/TAPE function keys
DAT/TAPE Selector switch
CD function keys
Tuner function keys
Turntable function keys
TV function keys (same functions in both the AUDIO and VIDEO modes)
VIDEO mode
Set the TRANSMIT mode selector switch to VIDEO.
VCR function keys
VDP function keys
TV function keys
C-90 function keys (All modes)
AUX mode
Set the TRANSMIT mode selector switch to AUX.
PIONEER
AUDIO VIDEO PROGRAMMABLE REMOTE CONTROL UNIT
SYSTEM REMOTE CONTROL

Set the LEARN selector switch to USE position.

■ TAPE DECK OPERATION

Set the TRANSMIT mode selector switch to AUDIO.

TAPE function keys (operation of cassette tape deck or DAT)

DAT/TAPE selector switch:
Set to DAT for operation of the DAT (Digital Audio Tape) deck, and TAPE for operation of the cassette tape deck.

Explanations in square brackets [ ] are for the DAT deck only.

O (REC MUTE) key:
For insertion of unrecorded spaces between selections.

● (REC) key:
Selects the recording mode.

▮▮ (PAUSE) key:
Temporarily stops the tape transport. Press again to resume tape transport.

I (DECK I) key:
Switches to the deck I functions when using a double casette tape deck.

[DAT PGM key]:
Press to program the DAT deck.

II (DECK II) key:
Switches to the deck II functions when using a double cassette tape deck.

◀◀ (FF) key:
Fast forwards the tape in the direction of the arrow.

◀ (PLAY) key:
Selects reverse playback.

■ (STOP) key:
Stops the tape transport.

▶ (PLAY) key:
Selects forward playback.

▶▶ (FF) key:
Fast forwards the tape in the direction of the arrow.

[1–0/10 (numeric) keys]:
For entering desired selections into the memory.

[MEMORY key]:
Stores the program in the memory.

[CLEAR key]:
Clears the program stored in the memory.

■ VCR OPERATION

Set the TRANSMIT mode selector switch to VIDEO.

VCR function keys (operation of VCR)

O VCR POWER key:
Switches the VCR power ON/OFF

● (REC) key:
Selects the recording mode.

▮▮ (PAUSE/STILL) key:
Sets pause and still picture.

I VCR CH – (DOWN) key:
Shifts channels in reverse order.

II VCR CH + (UP) key:
Shifts channels in numerical order.

◀◀ (REW) key:
Rewinds the tape and allows picture search.

◀ ANT key * :
This key can be used only for VCR with VCR/TV selector.
Switches the antenna output VCR to TV.

■ (STOP) key:
Stops tape transport.

▶ (PLAY) key:
Selects playback.

▶▶ (FF) key:
Fast forwards the tape and allows picture search.

Note on DAT operation

The program input procedure differs slightly from that of the remote control unit supplied with Pioneer DAT decks.

Procedure using the DAT deck remote control unit

1: [0]~[9] key → 2: [PROGRAM P] key → 3: Repeat steps 1 and 2 → 4: [▷] key

Procedure using the programmable remote control unit

1: [DAT PGM I] key → 2: (0/10)~(9) key → 3: [MEMORY 11 23] key → 4: Repeat steps 2 and 3 → 5: [▷] key

Direct selection with the remote control supplied with the DAT deck

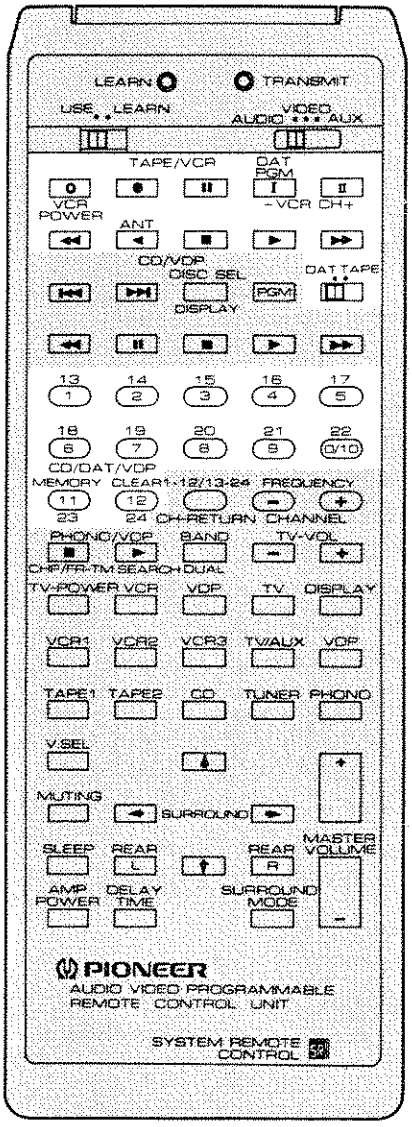
1: [0]~[9] key → 2: [▷] key

Direct selection with the programmable remote control

1: [DAT PGM I] key → 2: (0/10)~(9) key → 3: [▷] key

As above, [DAT PGM I] DAT function key must be pressed before entering a number.

* For switching the antenna input for an optional VCR (for example Pioneer VH-900) the code of the VCR remote control must be memorized.



Set the LEARN selector switch to USE position.

■ CD PLAYER OPERATION

Set the TRANSMIT mode selector switch to AUDIO.

CD Function Keys (Operation of CD player)

⏮ (TRACK SEARCH) key:
Returns to the beginning of the playing track.

⏭ (TRACK SEARCH) key:
(Advances to the next track.)

DISC SEL key
Selects the DISC No. (1 to 6) for Multi-play CD players.

PGM key:
Press to program the CD player.

◀◀ (MANUAL SEARCH) key:
Selects fast backward.

❚❚ (PAUSE) key:
Pauses playback.

■ (STOP) key:
Stops playback.

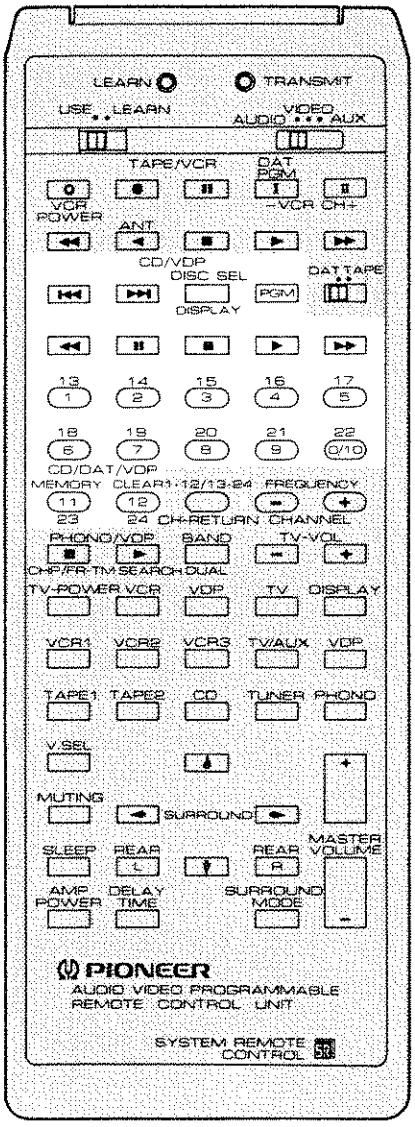
▶ (PLAY) key:

▶▶ (MANUAL SEARCH) key:
Selects fast forward.

1–0/10 (numeric) keys:
For direct selection of a track or programming of tracks.

MEMORY key:
Memorizes a program.

CLEAR key:
Erases a memorized program.



Note on CD operation

The program input and direct music selection procedures differ slightly from those of the remote control unit supplied with Pioneer CD players.

Programmed playback operation using the CD player remote control unit

(1: Disc No. [1]~[6] key) → 2: Track No. [1]~[0] key → 3: MEMORY key → 4: Repeat steps 1 to 3 → 5: PLAY key

Programmed playback operation using the programmable remote control unit

1: [PGM] key → (2: DISC SEL key) → 3: (0/10)~(9) key → 4: MEMORY key → 5: Repeat steps 2 to 4 → 6: [▷] key

Direct music selection using the CD player remote control unit

(1: Disc No. [1]~[6] key) → 2: Track No. [1]~[0] key → 3: PLAY key)

Direct music selection using the programmable remote control unit

(1: DISC SEL key) → 2: [PGM] key → 3: (0/10)~(9) key → 4: [▷] key

As above, the [PGM] CD operation key must be pressed before entering a number.

Set the LEARN selector switch to USE position.

■ AMPLIFIER OPERATION

AMPLIFIER function keys (operation of this unit)

INPUT SELECTOR keys:

Press VCR1, VCR2, VCR3, TV/AUX, VDP, CD, TUNER or PHONO to switch the amplifier input.

V.SEL key:

After pressing the V.SEL key, only the video signal can be changed. The selected audio signal remains as set.

TAPE MONITOR keys:

Press TAPE1, TAPE2 to switch between source and monitor.

MUTING key:

Used to temporarily mute the sound. The volume is restored when pressed again.

AMP POWER key:

Switches the amplifier power ON/OFF.

MASTER VOLUME (+, −) keys:

Adjusts the overall (front and surround) volume.

*** REAR L, R volume keys**

*** DELAY TIME key**

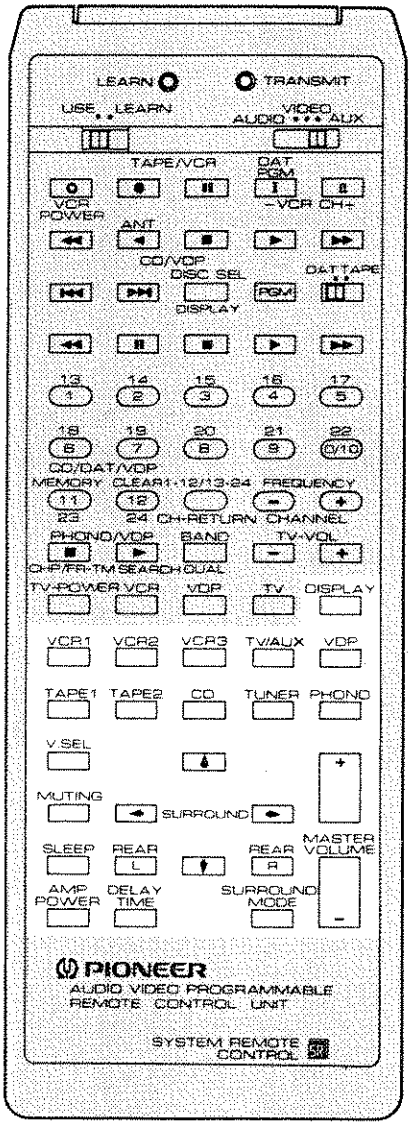
*** SURROUND keys (← ↑ ↓ →)**

*** SURROUND MODE key**

*** DISPLAY key:**

*** SLEEP timer key**

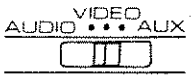
* C-90 is not equipped with such functions as REAR L, R volume, DELAY TIME, SURROUND, SURROUND MODE, DISPLAY and SLEEP timer. Use these keys for learning.



Set the LEARN selector switch to USE position.

■ VDP OPERATION

Set the TRANSMIT mode selector switch to VIDEO.



VDP function keys (operation of LD player)

|◀◀ (CHAPTER SKIP) key:
Returns the beginning of the present chapter.

▶▶| (CHAPTER SKIP) key:
Advances to the next chapter.

DISPLAY call key:
Clears the chapter and frame/time displays on the screen.

PGM (PROGRAM) key:
Allows use of chapter program play, frame search and time search.

◀◀ (SCAN) key:
Selects fast backward.

❚❚ (PAUSE) key:
Video and audio are stopped and playback is paused.

■ (EJECT) key:
Playback is stopped when pressed once. Pressing again causes the disc tray to come out to the prescribed location.

▶ (PLAY) key:
Selects playback.

▶▶ (SCAN) key:
Selects fast forward.

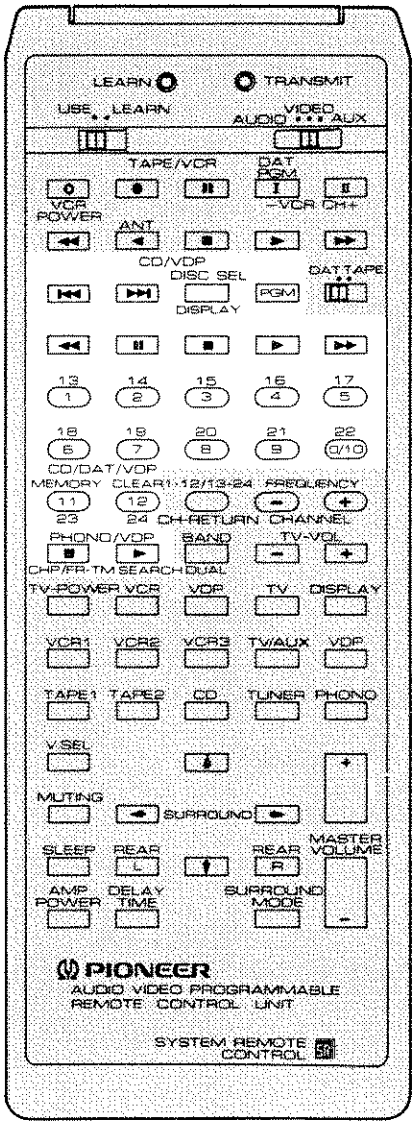
1 ~ 0/10 (NUMERIC) keys:
Used for chapter and frame/time number search and for chapter program play.

MEMORY key:
Used for chapter program play.

CLEAR key:
Used for releasing repeat playback, number correction and mode release during search operation, and for releasing chapter program play.

CHP/FR-TM (CHAPTER/FRAME · TIME) key:
Used for chapter or frame (time) search operation.

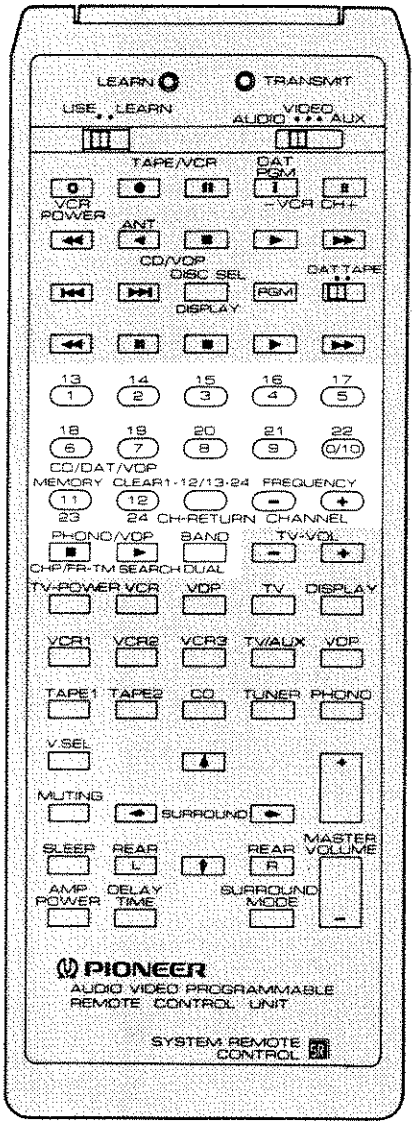
SEARCH key:
Used for the search operation and for the memory repeat operation.



Set the LEARN selector switch to USE position.

■ TUNER AND TURNTABLE OPERATION

Set the TRANSMIT mode selector switch to AUDIO.



TUNER function keys (operation of FM/AM Tuner)

1 to 12 (STATION CALL) keys:
For recall of tuner presets.

1–12/13–24 (mode selector) key:
Switches between Mode 1 (1 to 12) and mode 2 (13 to 24).

FREQUENCY + (UP):
Shifts the frequency up.:

FREQUENCY – (DOWN):
Shifts the frequency down.

BAND key:
Switches the FM and AM (MW and LW) bands by turns.

PHONO function keys (operation of turntable)

▶ (PLAY) key:
Selects play.

■ (STOP) key:
Stops play.

Set the LEARN selector switch to USE position.

■ TV OPERATION

Set the TRANSMIT mode selector switch to VIDEO.

TV function keys (operation of component display or projection monitor receiver)

1 to 12 (CHANNEL CALL DIGIT) keys:

Used to call up channels.

CH-RETURN key:

Returns to the previously received channel.

CHANNEL + (UP) key:

Changes the channel in the direction of larger CHANNEL CALL DIGIT numbers.

CHANNEL − (DOWN) key:

Changes the channel in the direction of smaller CHANNEL CALL DIGIT numbers.

DUAL (MTS) key:

Switches between MAIN, SAP, MAIN/SAP and (MONO). See the TV operating instruction for details.

* TV-VOL +, − keys:

Raises and lowers the volume.

* TV-POWER key:

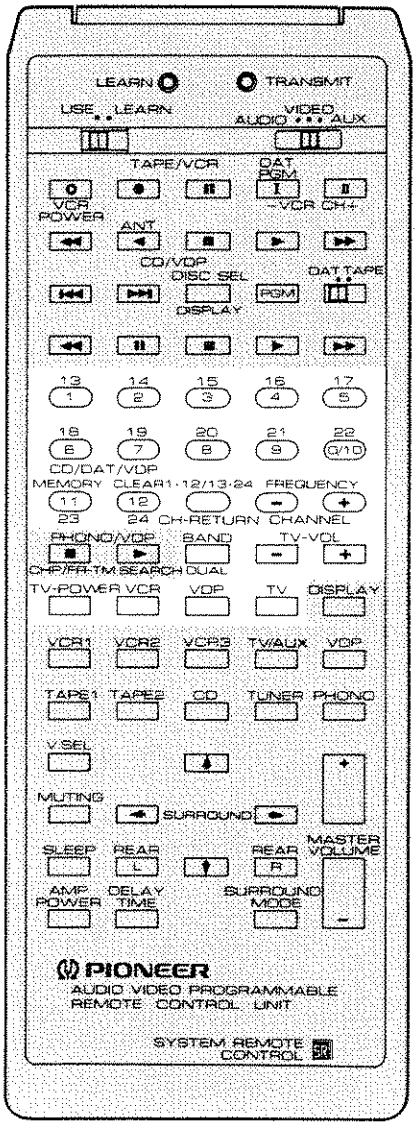
Switches the power of the TV ON/OFF.

* VCR, VDP, TV keys:

Switch to the corresponding input.

[Reference]

The keys marked with "*" have the same function in both the AUDIO and VIDEO positions.



USE OF LEARNING FUNCTIONS

INTRODUCTION

This system remote controller may "learn" the commands of other remote control unit, regardless of manufacturer, as long as the other unit is of the infrared type.
In some cases you may still need the original remote control unit for special situations. But as a rule, you will be able to use this Pioneer remote for most system control needs, including video as well as audio equipment.

NOTE:
When using the "LEARN" mode it is a good idea to take the two remote control lunit to another room. This avoids problems such as sudden high volume output or accidental tape erasure that may occur if particular infrared command signals reach your components. Alternatively you may wish to unplug your component system. Simply turning off teh power may not be sufficient since power on/off switching may also be remote controllable.

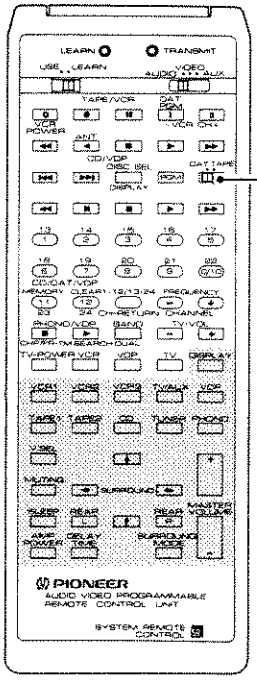
WHICH KEYS CAN BE PROGRAMMED WITH NEW COMMANDS?

There are two mode selector switches near the front end of the remote.
The LEARN mode selector lets you select the USE or LEARN function. The LEARN mode allows the Pioneer remote to "learn" the commands of other remote control units. The USE mode allows you to use this remote control unit for operation of your system.

The keys on the remote control unit change their functions according to how the TRANSMIT mode selector is set. You can switch the TRANSMIT mode between AUDIO, VIDEO, and AUX modes. However, the keys in the SURROUND AMPLIFIER section always have the same functions.
You can assign new commands to the keys in each of the modes. In the AUX mode, all keys are available to be programmed with new commands. In the VIDEO and AUDIO modes, all keys except the SURROUND AMPLIFIER keys can be assigned new commands.
When you first start using the remote control unit, it contains initial commands appropriate for Pioneer equipment (when set to the AUDIO and VIDEO modes). If your audio and video equipment consists of Pioneer components exclusively you can use the remote control unit as is. It is also possible to restore the original Pioneer commands after assigning other commands. (Refer to "Returning to the Initial State" for this procedure.)

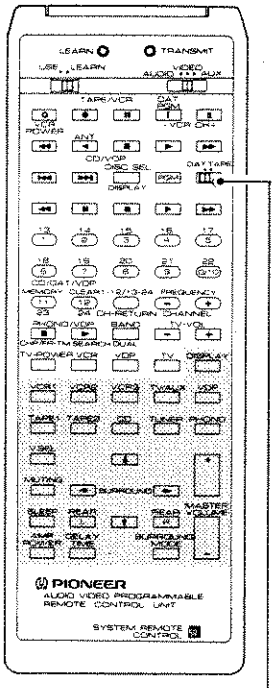
- In each mode one function per key may be programmed, for a total of up to 154 functions.
- When a presetting keys, make sure that the remote control units of both this and theother component are loaded with fresh batteries.
- For some special types of infrared remote control units programming may be impossible.

AUDIO mode



In the AUDIO mode the TAPE function keys can be preset with new functions for the DAT position or the TAPE position.
The initial SR settings will remain in the other position (43 keys can be programmed.).

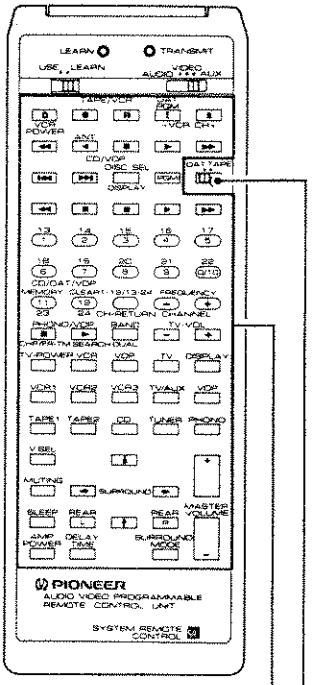
VIDEO mode



In the VIDEO mode the DAT/TAPE 1 switch is inoperative (43 keys can be programmed.).

When teaching functions whose names differ from those of the keys, write in the names or codes of the functions on the included templates and place on the panel.

AUX mode



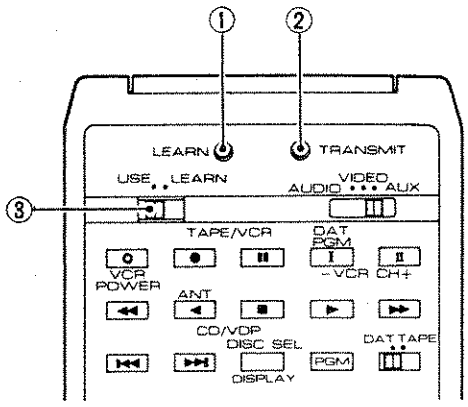
All buttons can be preset (68 keys can be programmed.).

In the AUX mode the DAT/TAPE 1 switch is inoperative.

[Operation Example]

Using the remote control unit of your VCR to program the playback command.

- It is recommended that the name of the key and its function correspond. This is convenient when operating equipment.



① LEARN indicator

This indicator shows the remote control unit operating condition.

LIT:
Learning is possible.

OFF:
Regular remote control functions are performed.

FLASHING:
Means the key is not available for programming a new command in the current mode.

② TRANSMIT indicator

This indicator flashes when remote control signals are sent.

③ LEARN selector switch

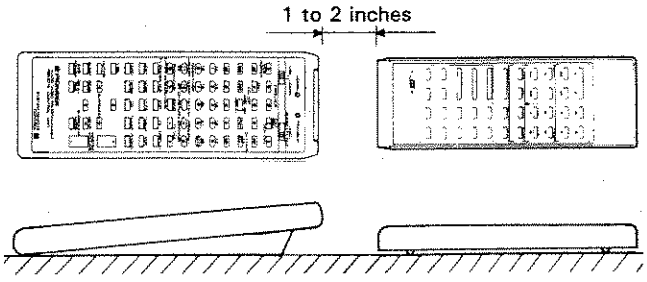
Set as follows:

LEARN:
This position is used for storing the codes of your remote control unit.

USE:
Set to this position after codes have been stored in the LEARN position. Set to this position for normal operation.

[Operation example]

1. Set the LEARN selector switch of the programmable remote control unit to the LEARN position and set the TRANSMIT mode selector switch to the VIDEO position.
   - Programming is possible with the TRANSMIT mode selector switch in any position, but VIDEO is used as an example.
2. Place the transmission sections of the programmable remote control unit and the remote control of the VCR facing each other.



   - Place the two units on a table, separated by 2 to 5 cm (1 to 2 inches).
     Memorization will not be possible if they are too close.
3. Hold down the VCR PLAY key of the programmable remote control unit until the LEARN indicator lights up, then release the key.
4. Hold down the PLAY key of the VCR remote control unit.
5. Release the key of the VCR remote control unit after making sure that the LEARN indicator has gone out on the Pioneer remote control unit.

NOTE:
If the LEARN indicator flashes, it indicates that you are trying to preset a key not available for the learning function, or otherwise the program capacity has been exceeded. In case the program capacity has been exceeded, the function programmed last will not be memorized correctly. All previously programmed functions, however, will be retained in memory and may be used as they are if the last function is not essentila. For re-programming refer to page 19 "Returning to the Initial Settings".

6. Set the LEARN selector switch of the programmable remote control unit to the USE position.
   - The previous code (Pioneer uniform remote control code or code for other equipment) is erased and replaced by the new code.
7. Check that the program works.
   - Try actual operation and make sure the unit works properly.
   - If the VCR does not operate when pressing the key, change angle, position and distance between both remote control units and repeat the programming procedure.
   - When programming, make sure that the function indications (for example, ▶, ▶▶, ■) on the other remote control unit and the programmable remote control unit are the same. This will facilitate operation.

QUESTIONS AND ANSWERS ABOUT THE LEARNING FUNCTION

Q: The remote control unit of my VCR has two REC (recording) keys. They both have to be pressed at the same time to start recording. What is the learning procedure in this case?

A: Hold one of the keys on the programmable remote control unit depressed (for example the VCR ● key) until the LEARN indicator lights up, and then press the two keys on the VCR remote control simultaneously.

Q: The remote control unit of my VCR has a REC (recording) key and a PLAY (playback) key and they both have to be pressed at the same time to start recording. What is the learning procedure in this case?

A: Hold one of the keys on the programmable remote control unit depressed (for example the VCR ● key) until the LEARN indicator lights up, and then press the REC and PLAY keys on the VCR remote control unit simultaneously.

- As described above, operations which require two keys to be pressed at the same time are programmed by pressing the two keys simultaneously.

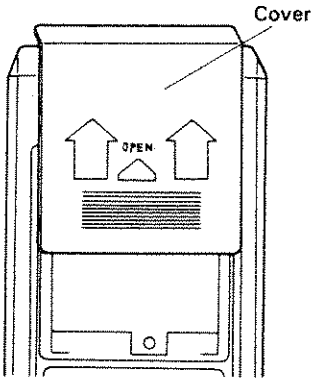
OPERATING OTHER EQUIPMENT BY THE PROGRAMMABLE REMOTE CONTROL UNIT

1. Set the LEARN selector switch of the programmable remote control unit to the USE position.
2. Set the TRANSMIT mode selector switch to the desired position (AUDIO/VIDEO/AUX).
   - Set to the VIDEO position for programming as described in the example.
3. Press the key of the desired function.
   - The TRANSMIT indicator lights up while the remote control unit is sending codes.

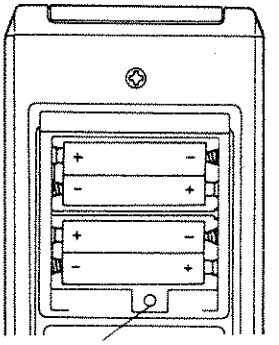
NOTE:
- *When operating programmed keys, always set the LEARN switch to the USE position. Operation is not possible in the LEARN position.*
- *For functions which require two keys to be pressed at the same time (recording etc.) or functions for which several codes are sent simultaneously (auto functions, timer programming, etc.) the programming procedure is different and improper operation may occur.*

RETURNING TO THE INITIAL SETTINGS

1. Set the LEARN selector switch to the LEARN position.
2. Remove the battery cover.



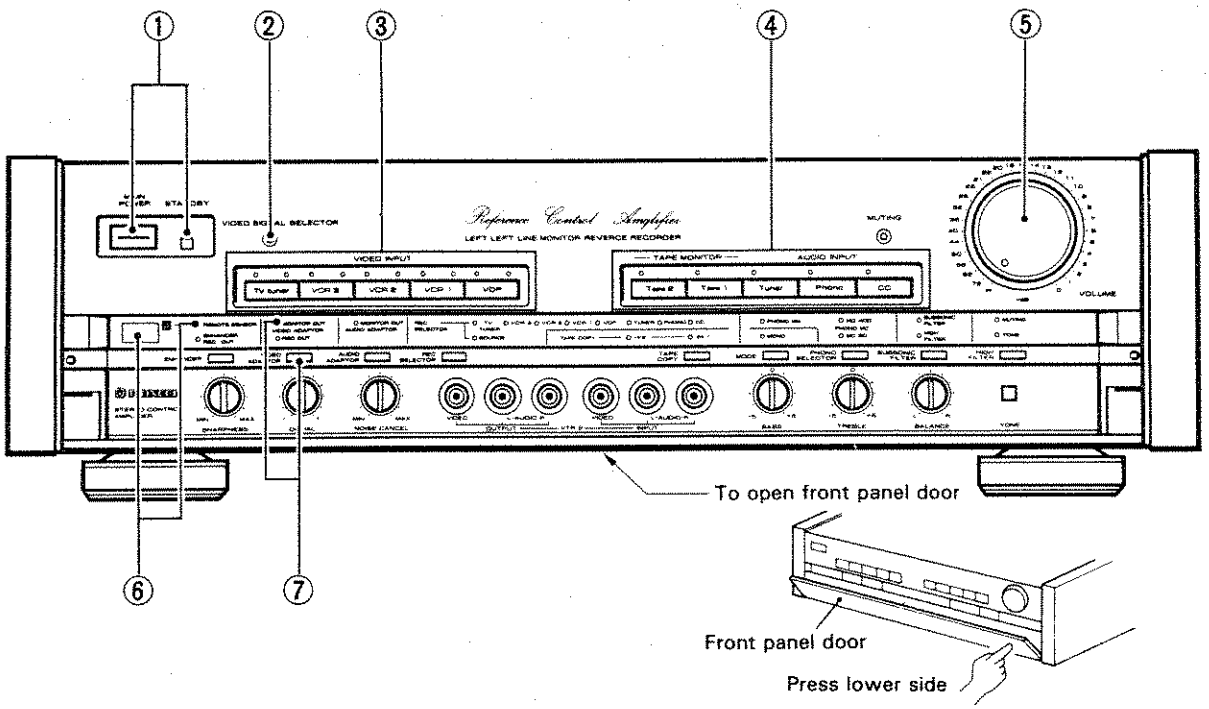
3. Press any of the keys available for programming. The LEARN indicator will illuminate.
4. Use a ball-point pen or similar object to press the RESET key while the LEARN indicator is flashing.



- The programmed functions for the AUDIO, VIDEO and AUX positions are cleared, and theremote control unit is reset to the Pioneer uniform remote control codes.
- Press the button gently; do not use excessive force.

PANEL FACILITIES

FRONT PANEL



① MAIN POWER switch

STANDBY switch/indicator

- When the power switch is in the ON position, power can be turned ON/OFF to the amplifier and to the rear panel REMOTE CONTROL power outlets.
- Power is turned ON/OFF alternately with each press of the switch; when in the OFF (stand-by) position, the indicator will light (when in the ON position, the indicator will flash, then go out).
- The accessory remote control unit can be used to turn this switch ON/OFF, with the result that the remote control unit can be used from the listening position to control power not only to the amplifier, but also to those components connected to the rear panel REMOTE CONTROL power outlets.
- When not using the amplifier for an extended period of time, be sure to set the main power switch to the OFF position.

② VIDEO SIGNAL SELECTOR switch

Use to switch the video component's video signal regardless of the position of the input selector switch. The video indicators (green) above the input selector switch will light in order.
Even when listening to an audio component (record player, tuner, etc.), this switch can be used to perform video recording and playback while continuing to listen to the audio component playback.

③ VIDEO INPUT selector switches/indicators

Use to select the video component for playback.

[VDP] ——— To play back the video disc player connected to the rear panel VDP terminals.
[VCR1] ——— To play back the VCR connected to the rear panel VCR1 terminals.
[VCR2] ——— To play back the VCR connected to the front panel VCR2 terminals.
[VCR3] ——— To play back the VCR connected to the rear panel VCR3 terminals.
[TV tuner] —— To use the TV tuner connected to the rear panel TV TUNER terminals.

The red indication light during audio playback, while the green indicators light during video playback.
This switch is interlocked with the AUDIO INPUT selector.

④ AUDIO INPUT selector switches/indicators

Use to select the audio component for playback (the indicator will light).

[CD]: For compact disc player.
[Phono]: For turntable.
[Tuner]: For listening to FM/AM broadcasts with a tuner.
[Tape 1]: To use the tape deck connected to the rear panel Tape 1 terminals.
[Tape 2]: To use the tape deck connected to the rear panel Tape 2 terminals.

The Tape 1 and 2 switches go ON or OFF alternately each time they are pressed, independently of the other switches.

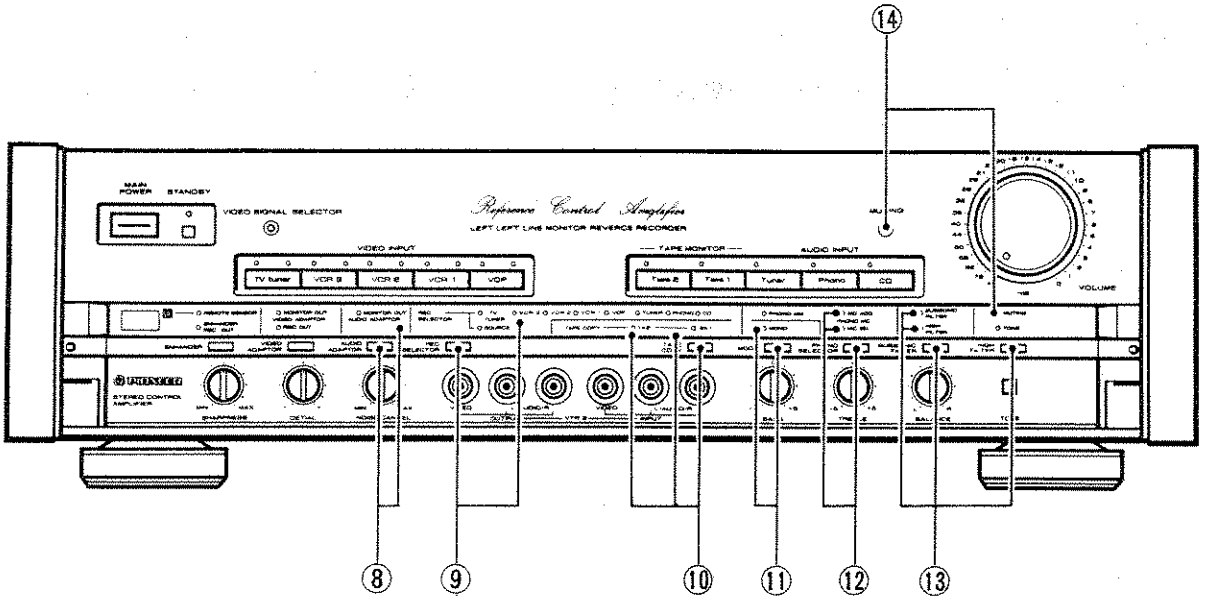
⑤ VOLUME control

Use to adjust the sound volume. At the [∞] position, sound will not be heard, while at the [0] position, sound volume will be at its maximum.

⑥ REMOTE SENSOR/indicators

⑦ VIDEO ADAPTOR switch/indicator

Set to the ON position when using the component connected to the rear panel ADAPTOR terminals VIDEO IN and OUT.



MONITOR OUT lights:
The image enhanced with the adaptor component can be played back on the color monitor or TV connected to the MONITOR OUT terminal or RF MODULATOR terminal.

REC OUT lights:
The image enhanced with the adaptor component can be played back on the color monitor connected to the REC MONITOR terminal or the VIDEO OUT terminal of VCR1–3.

⑧ AUDIO ADAPTOR switch/indicator

Normally leave in the OFF position.
Set to ON when using the audio adaptor component connected to the rear panel adaptor terminals AUDIO IN/OUT (indicator lights).

⑨ REC SELECTOR switch/indicators

Use to select the playback source component used when performing audio and video recording on VCR 1, 2, and 3. The audio and video signals (in the case of a video component), or audio signals (in the case of an audio component) from the select component will be output from the VCR 1,2,3 REC terminals. When set to SOURCE, the signals selected with the audio or video input selector switch will be output.
When performing video recording, the built-in enhancer function can be used to enhance the quality of the recorded video signals (see the instructions regarding the enhancer switch and picture enhancement). The enhanced picture can be monitored on the color monitor connected to the rear panel REC MONITOR terminal.

NOTE:
No signal is output to the REC terminal of the input component selected with the recording selector switch. For example, when REC SELECTOR is used to select VCR1, no signal will be output to the REC terminal of VCR1.

⑩ TAPE COPY switch/indicators

Use when performing tape copying between the tape decks connected to the TAPE1, and TAPE2 terminals.
1 ▶ 2: To copy the Tape 1 playback onto Tape 2.
2 ▶ 1: To copy the Tape 2 playback onto Tape 1.

⑪ MODE selector switch/indicator

Use to select the stereo or monaural audio playback mode. Normally, this switch is not used.
When the monaural playback mode is selected, press this switch; the MODE MONO indicator will light.

⑫ Cartridge selector switch/indicators (PHONO SELECTOR):

Set in accordance with the type of cartridge used on your record player (the corresponding indicator will light).

[MM] ——— Set here when using a moving magnet cartridge, or a high-output (1mV or more) moving coil (MC) cartridge.
[MC 40Ω] ——— Set here when using a moving coil cartridge with impedance of 40 ohms.
[MC 3Ω] ——— Set here when using a MC cartridge with impedance of 3 ohms.

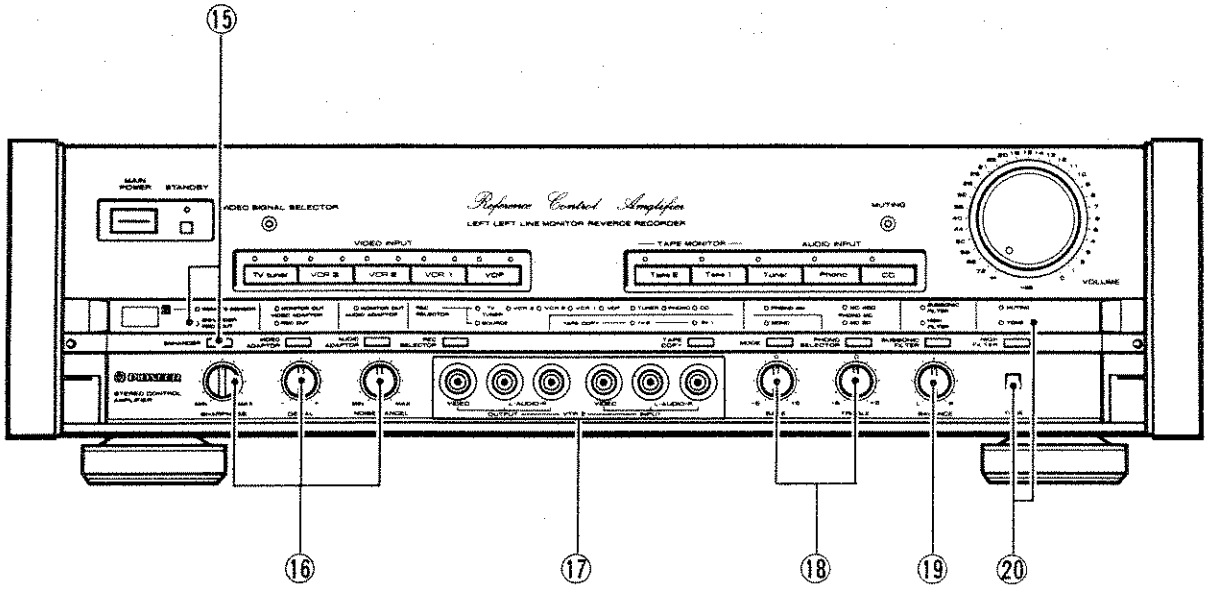
⑬ FILTER switches/indicators

SUBSONIC
When the switch is pressed to the ON position, the indicator lights and the subsonic filter acts to cut out all frequencies below 7 Hz.

HIGH FILTER
When the switch is pressed to the ON position, the indicator lights and the high-cut filter acts to eliminate all frequencies above 10 kHz.

⑭ MUTING switch/indiator

Use to temporarily reduce the sound volume to −20 dB normal. The muting function is on when the MUTING indicator lights. Press the switch again to turn the muting function off and return the sound volume to the normal level.



⑮ ENHANCER switch/indicator

When performing VCR recording, the built-in enhancer allows you to compensate the recorded picture quality. Please the switch so that the indicator lights, then adjust the image quality using the video compensation controls.

⑯ Video compensation controls

Use these compensation controls after pressing the ENHANCER switch so that the indicator lights.

[SHARPNESS]: Use to sharpen hazy image contours.
[DETAIL]: Use to compensate for flat image detail.
[NOISE CANCEL]: Use to reduce noticeable video noise.

The video image compensated with these controls can be viewed on a TV monitor connected to the rear panel REC MONITOR or MONITOR OUT terminals.

NOTE:

- *When using the video compensation controls, perform compensation based on the quality of the playback image. If too much compensation is applied, black and white stripes may appear in contour areas. As a result, the image should be adjusted to the optimum quality while viewing the results on a color TV monitor connected.*
- *To view the enhanced image on the color monitor connected to the MONITOR OUT terminal, select the playback source with the recording selector switch, and use the video input selector switch to select the component being used for video recording.*

⑰ VCR2 front panel terminals

Use to connect a second video cassette recorder.

[INPUT]
VIDEO: For video input (connect to VCR's video output terminal).
AUDIO: For audio input (connect to VCR's audio output terminals).

[OUTPUT]
VIDEO: For video output (connect to VCR's video input terminals).
AUDIO: For audio output (connect to VCR's input terminals).

⑱ Tone controls

These controls can be used only when the TONE indicator is lit.

[BASS] — Use to adjust low frequency sounds. The central [0] indicates the standard (flat) position. When the control is rotated to the right, low-frequency sounds are augmented; when rotated to the left, low-frequency sounds are attenuated.

[TREBLE] — Use to adjust high-frequency sounds. The central [0] indicates the standard (flat) position. When the control is rotated to the right, high-frequency sounds are augmented; when rotated to the left, high-frequency sounds are attenuated.

⑲ BALANCE control

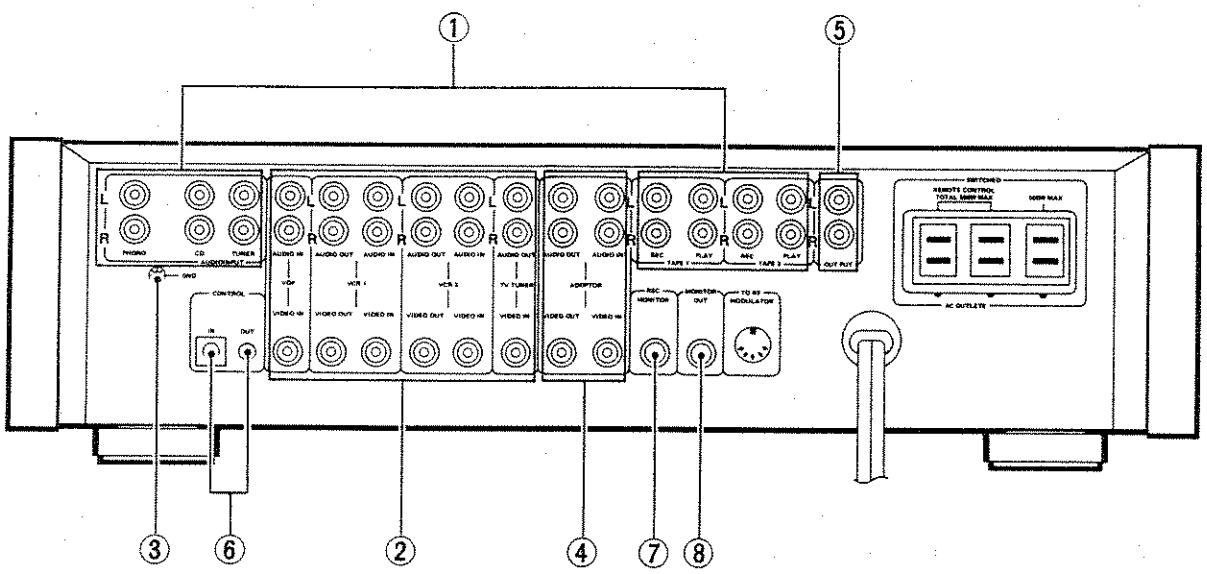
Normally leave in the center position. Use to adjust the balance of sound from right and left channels.

⑳ TONE switch/indicator

[ON] — The TONE indicator lights, and audio inputs from all components are played back after passing through the tone control circuits. In this condition, the tone controls (BASS, TREBLE) can be used to adjust sound quality.

[OFF] — The TONE indicator goes out, and signals are played back without passing through the tone control circuits.

REAR PANEL



① Audio components terminals

[PHONO] —— Turntable.
[CD] —— Compact disc player.
[TUNER] —— FM/AM Tuner
[TAPE 1] —— Tape deck 1 (first deck).
PLAY: For playback (connect to the tape deck's PLAY terminals).
REC: For recording (connect to the tape deck's REC terminals).
[TAPE 2] —— Tape deck 2 (second deck).

② Video components terminals

Connect to the video and audio terminals of the video components you plan to use.

[VDP] —— Video disc player.
[VCR 1] —— Video cassette recorder 1 (first unit).
IN terminals: For input. Connect to the VCR's video and audio output terminals.
OUT terminals: For output. Connect to the VCR's video and audio input terminals.
[VCR 3] —— Video cassette recorder 3 (third unit).
[TV TUNER] —— TV Tuner

③ Ground (GND) terminal

Connect to the ground terminal of your turntable.

④ ADAPTOR IN, OUT terminals

Use to connect a video adaptor component (color corrector, enhancer, etc.), personal computer, or PCM processor. Alternately, an audio adaptor component such as a sound processor, or graphic equalizer may also be connected.

⑤ OUTPUT terminals

Connect to the control amplifier (pre-amplifier) inputs of the power amplifier (main amp).

⑥ CONTROL terminals

IN: Use a control cord to connect when performing remote operations using this unit's remote control unit in conjunction with the remote sensor on the Pioneer component display.
OUT: The control signal received at the amplifier's signal sensor from the remote control unit is output here to other components. Use a control cord to connect to other components when controlling those components with this remote control unit.

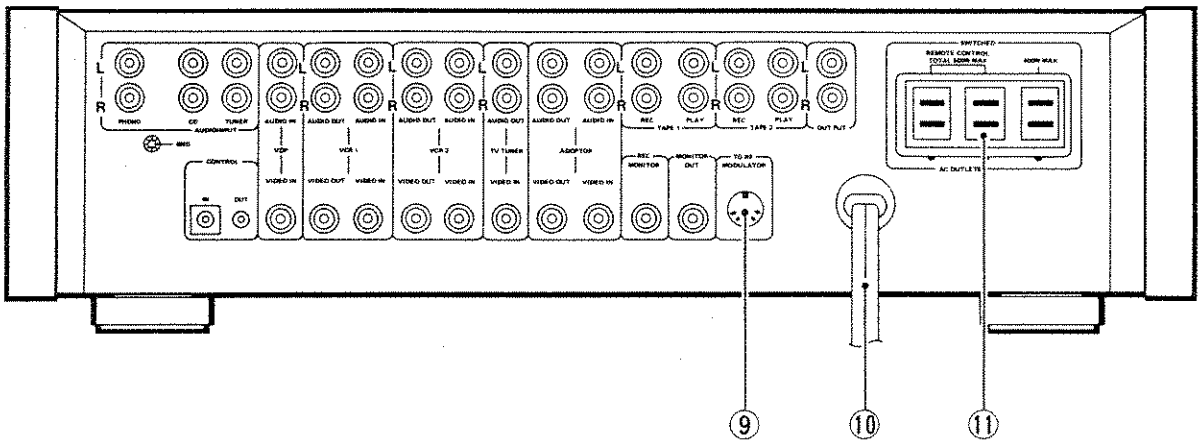
NOTE:
Control connections can be performed only when using Pioneer components bearing the 5N *mark.*

⑦ REC MONITOR terminal

This video output terminal may be used to view the condition of image compensation as performed with the built-in enhancer. Connect to a color monitor or a television set equipped with video terminal. In this way you can monitor the condition of recording in progress on your video cassette recorder.

⑧ MONITOR OUT terminal

This terminal outputs the video playback picture from the video components connected to this unit. Connect to the video input terminal of a color monitor or television set.



⑨ RF modulator terminal (TO RF MODULATOR)

The video playback signal from the video components connected to this unit are output here, thus allowing the playback to be viewed on a television set. When using a normal television set not equipped with video input terminal, connect this terminal to the terminal of an RF modulator (available commercially), and connect the RF modulator to the television set.

NOTE:
The television set connected to the RF MODULATOR terminal will play back only the video image, with the result that sound must be played back using the stereo amplifier. When using the television set alone, use an RF selector switch (available commercially), and connect the television antenna directly to the television set.

⑩ Power cord:

Connect to a household wall outlet, or the power outlet of an audio timer.

⑪ AC OUTLETS (SWITCHED)

Other components may be connected to these outlets, so long as their combined power consumption does not exceed the limits noted on the panel.

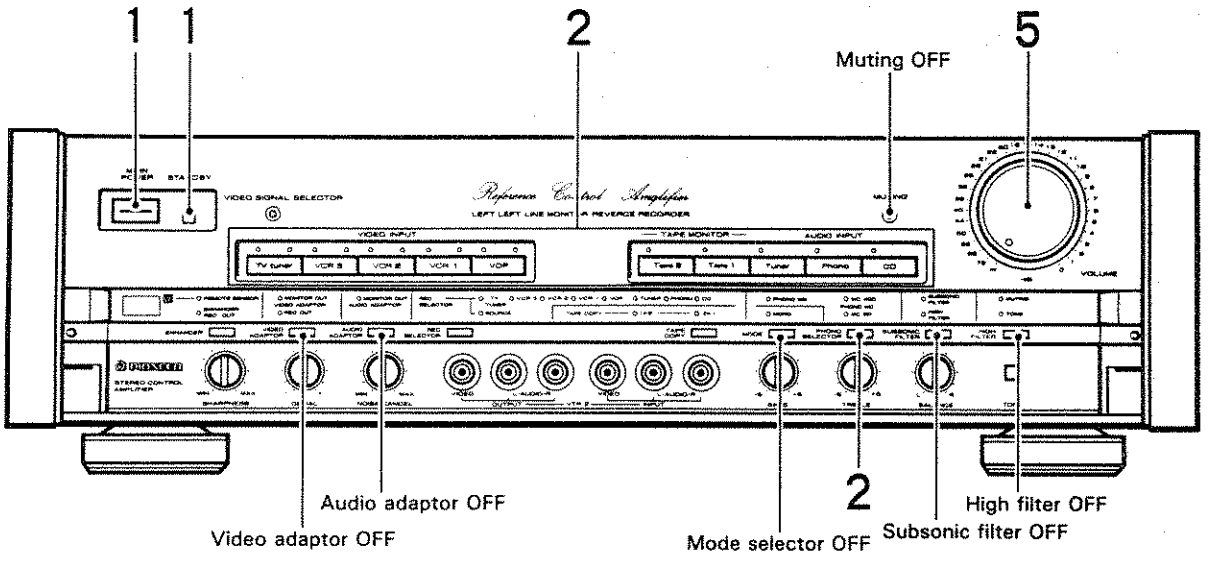
[REMOTE CONTROL TOTAL 500 W MAX]
Power to the components connected to these outlets can be controlled by the amplifier's stand-by key, or by the POWER key on the remote control unit.
Do not connect components with combined power consumption exceeding 500 W.
[500 W MAX]
Power to the component connected to this outlet is controlled by the amplifier's POWER switch.
Do not connect any component with power consumption exceeding 500 W.

About power consumption of power outlets.

Never connect any appliance (e.g. toaster, hair dryer, etc.) with a power consumption greater than the wattage shown on the panel. Fire or damage to components could result.

OPERATIONS 1 (Basic Operation)

TO PLAY BACK A CONNECTED COMPONENT.



1 Turn on the power to the C-90 and to your power amplifier.

If your power amplifier has an input selector, set it to amplify the signal from the C-90.

2 Set the audio input selector switch or the video input selector switch to the component to be played back.

[For Audio Components]
Set so that the indicator above the switch lights.

- To listen to compact discs.
  Press [CD].
- To listen to records
  Press [Phono].
  Set the PHONO SELECTOR switch to the type of cartridge used (MM, MC 40Ω, MC 3Ω).
- To listen to FM/AM radio broadcasts
  Press [Tuner].
- To play back tape deck 1
  Press [Tape 1].
- To play back tap deck 2
  Press [Tape 2].

[For Video components]
Set so that both indicators (red, green) above the switch light.

- For video discs playback
  Press [VDP].
- For VCR 1 playback
  Press [VCR 1].
- For VCR 2 playback
  Press [VCR 2].
- For VCR 3 playback
  Press [VCR 3].
- To use the TV tuner
  Press [TV tuner].

NOTE:

- *When playing back components other than tape deck 1 or tape deck 2, set [Tape 1] and [Tape 2] to the OFF position (indicators go out).*
- *When playing back tape deck 1, set [Tape 2] to OFF.*

3 Turn on the power to the components to be used.

When playing back a video component, also turn on the power to your television set or color monitor.

4 Operate the playback component to begin playback.

5 Adjust the sound volume with the volume control.

SUBSONIC FILTER

In the event of low-frequency noise arising from such causes as record warp, set the SUBSONIC filter to the ON position. A 7 Hz filter will be applied to cut out the unwanted low-frequency noise.

HIGH FILTER

In the event that high-range sounds of the playback are too strong, set the HIGH FILTER to the ON position. A10 kHz filter will be applied to attenuate the high-range emphasis.

TONE CONTROL

To adjust the tone of the playback sound, press the TONE switch so that the TONE indicator lights. Then use the BASS, TREBLE controls to adjust the tone as desired.

VIDEO ADAPTOR/AUDIO ADAPTOR

Be sure to set this adaptor to the OFF position when not using adaptor equipment.

AUDIO TAPE RECORDING

To record the sound you are presently listening to

By setting the RECORDING SELECTOR to SOURCE, and operating the tape deck for recording when listening to the sound from FM/AM broadcasts, records, compact discs, or the audio channel from VDP, VCR1, VCR2, VCR3, and TV tuner, these sources can be recorded on the tape deck.
(See your tape deck's operating instructions for information on tape recording.)

TAPE COPYING

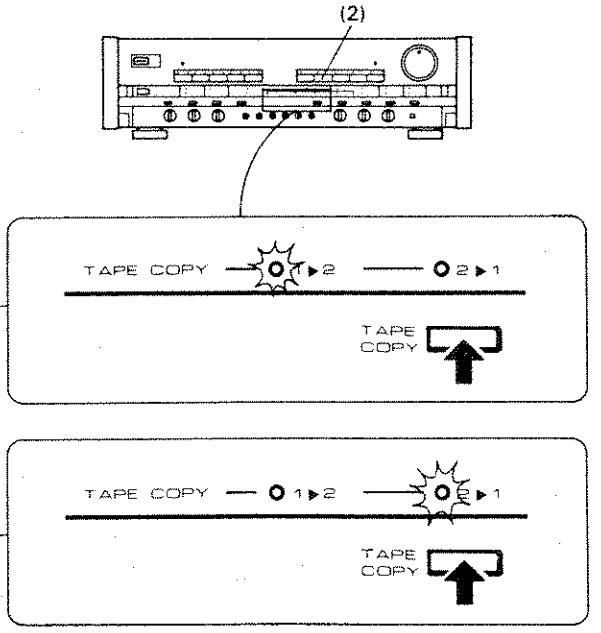
When two tape decks are used, a prerecorded tape can be played on one deck and copied onto the tape in the other deck.

Recording from tape deck 1 to tape deck 2

(1) Load a prerecorded tape into take deck 1, and a tape for recording into tape deck 2.
(2) Press the TAPE COPY switch so that the 1 ▶ 2 indicator lights.
(3) Set tape deck 1 to the playback, and tape deck 2 to the recording mode.

Recording from tape deck 2 to tape deck 1

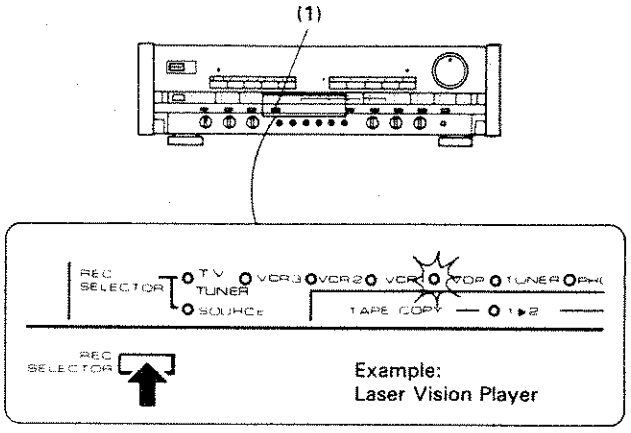
(1) Load a prerecorded tape into tape deck 2, and a tape for recording into tape deck 1.
(2) Press the TAPE COPY switch so that the 2 ▶ 1 indicator lights.
(3) Set tape deck 2 to the playback, and tape deck 1 to the recording mode.



VIDEO/AUDIO RECORDING ONTO A VIDEO TAPE

(1) Press the RECORDING SELECTOR switch to select the playback component. If the recording selector is set to SOURCE, the signal selected with the input selector switch will be output to each VCR terminal.
(2) Load a video tape for recording into the VCR unit to be used for video/audio recording.
(3) Operate the playback component to begin playback, and set the VCR to the recording mode.

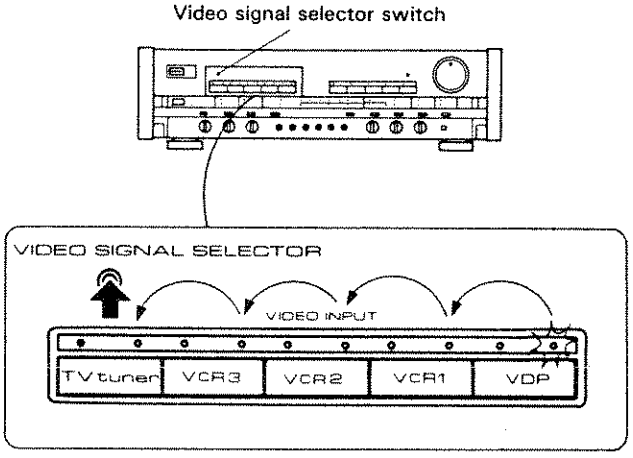
Copying of a prerecorded video tape can be performed by loading the prerecorded tape into the playback VCR and selecting that component with the REC SELECTOR switch, and by using another VCR for recording.



USING THE VIDEO SIGNAL SELECTOR SWITCH

- Press the VIDEO SIGNAL SELECTOR switch so that the green indicator lights above the desired playback component.
- The video signal selector operates in the order VDP → VCR1 → VCR2 → VCR3 → TV TUNER → OFF → VDP ...

NOTE:
Whenever using this switch, set your VCR to the pause mode. If the video signal selector is switched during video recording (when tape is running), the recorded picture and sound may be temporarily disrupted at the time of switching (this depends on the VCR used).

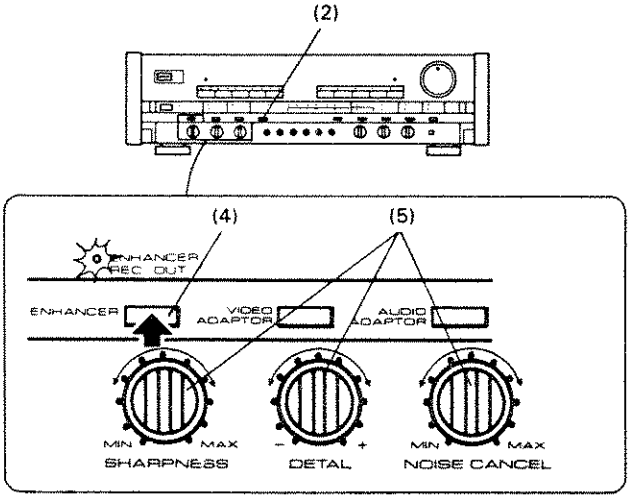


MONITORING AND COMPENSATING VIDEO RECORDINGS:

By connecting a color monitor to the rear panel REC MONITOR terminals, you can view the image currently being recorded.
Also, if the playback picture quality is poor, the image can be compensated by using the C-90's built-in enhancere, and the resulting image recorded.

[Operation]

(1) Turn on the power to the color monitor connecte do the REC MONITOR terminals.
(2) Select the playback component with the recording selector switch.
(3) Operate the playback component to begin playback.
(4) Press the enhancer switch so that the ENHANCER indicator lights.
(5) Use the picture quality controls (SHARPNESS, DETAIL, NOISE CANCEL) to adjust the picture seen on the color monitor to its optimum condition.
(6) Load a non-recorded video tape in the recording VCR, and begin recording.



OPERATIONS 2 (Applications)

SUPERIMPOSING PICTURE AND SOUND FROM VIDEO COMPONENTS AND PERSONAL COMPUTER.

When the Pioneer personal computer PX-7 is connected to the C-90, sounds and images produced on the PX-7 can be superimposed with images played back from video components.

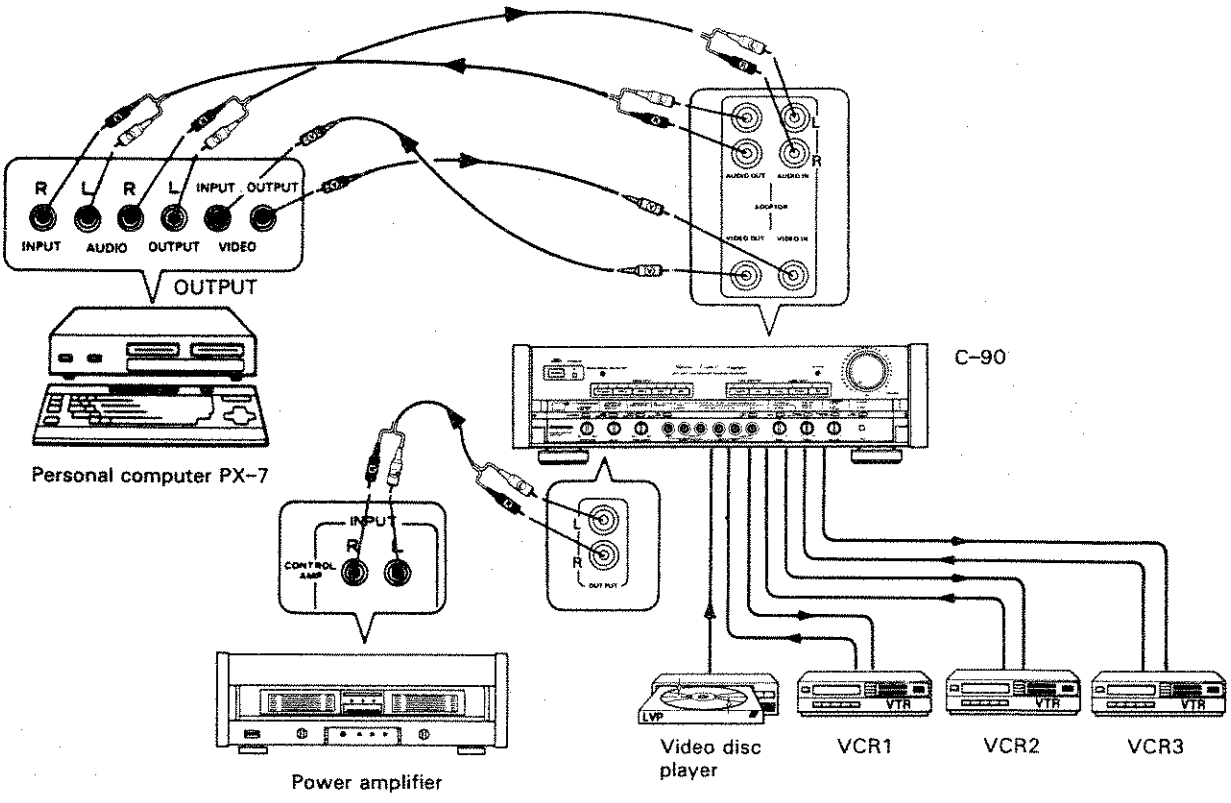
[Operations performed on the C-90]

(1) Set the input selector switch to the playback video component you wish to use.
(2) Set the video adaptor switch to ON (MONITOR OUT).
(3) Set the audio adaptor switch to ON.

[Operations performed on the PX-7]

When the screens will appear:
SUPERIMPOSE:
The component selected with the C-90 will be superimposed with the pictures and sound produced on the PX-7.
VIDEO:
The picture and sound of the component selected with the C-90 will be played back.
COMPUTER:
The image and sound produced with the PX-7 will be played back.

[CONNECTION]



PCM RECORDING AND PLAYBACK

By connecting a PCM processor, you can use the video tapes played on your video cassette recorder to perform PCM digital sound recording and playback for extremely high sound quality.

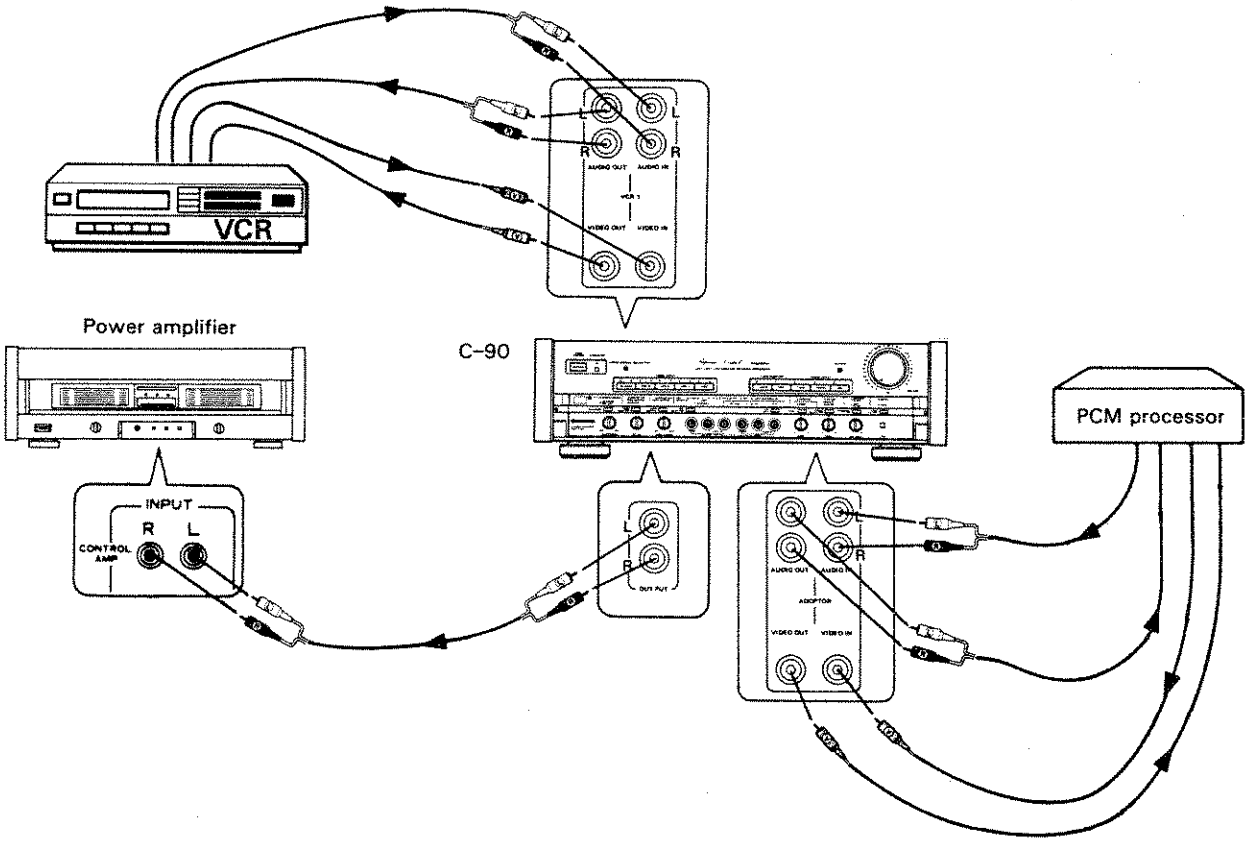
[C-90 operations during recording]

(1) Set the input selector switch to a component other than the video cassette recorder you plan to use for sound recording.
(2) Set the video adaptor switch to ON.
(3) Set the video cassette recorder to the recording mode.

[C-90 operations during playback]

(1) Set the input selector switch to the video cassette recorder loaded with the prerecorded video tape you wish to play back.
(2) Set the audio adaptor switch to ON.
(3) Set the video adaptor switch to OFF.

[CONNECTION]



EXPANSION TO A SURROUND SYSTEM

Normal stereo playback is based on three-dimensional sound from the front (speakers) direction only. In fact, however, when listening to an actual live concert at a concert hall or theater, sound is heard not only from the front, but it envelops the body from all sides, reverberating off the high ceiling and wide wall area. Such sound qualities form elements of the sense of "presence" and "spatial breadth" felt at such live concerts. The surround system is a means of reproducing this sense of presence and breadth.

[C-90 Operations]

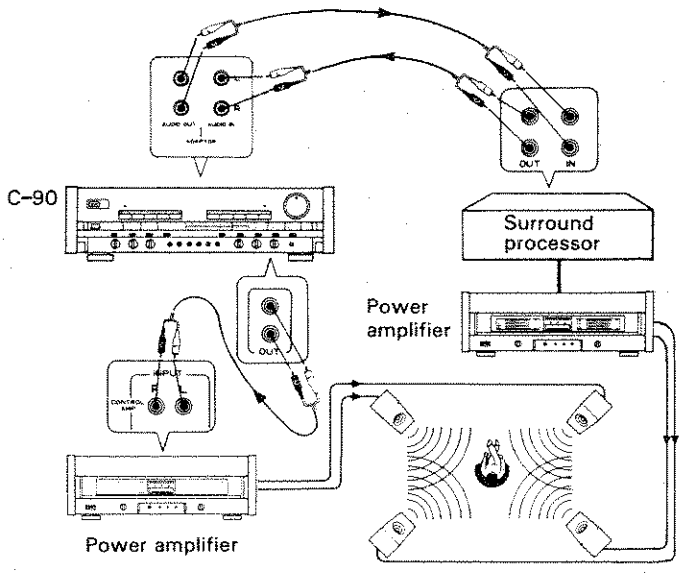
(1) Set the input selector switch to the playback component.
(2) Set the audio adaptor switch to ON.

[Surround processor operations]

Refer to the Operating Instructions for the surround processor used.

NOTE:
When using the surround processor, set the INPUT LEVEL switch to the [0.15 V] position.

[CONNECTIONS]



SYSTEM CONTROL

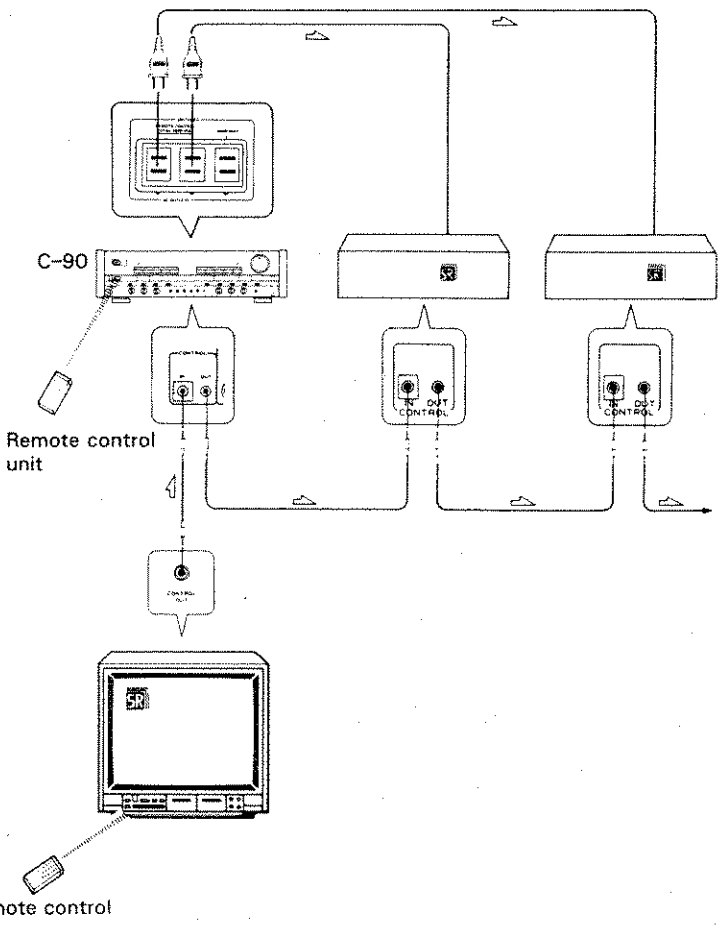
Unified system control can be performed when using Pioneer components equipped with control input terminals, and bearing the SR mark.

[Connections]

Connect the control input and output terminals in order.
Be sure to connect properly, since system control lcannot be performed when video or audio cables are not connected.

[Operation]

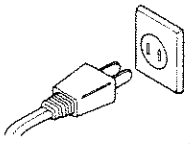
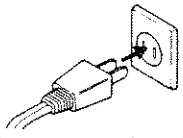
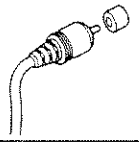
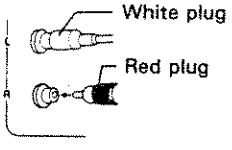
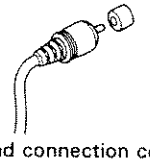
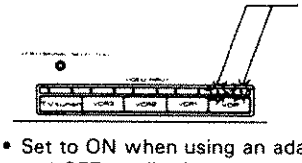
The remote control lunit furnished with the C-90 can be used to perform remote control of the major functions of the control-connected components.



When the telelvision's CONTROL OUT is connected to the amplifier' CONTROL IN, point the remote control unit at the remote sensor on the television set when performing remote operations. Be sure that the television set's main power switch is ON.

TROUBLESHOOTING

Incorrect operations are often mistaken for trouble and malfunctions. If you think that there is something wrong with this component, check the points below. Sometimes the trouble may lie in another component. Investigate the other components and electrical appliances being used.
If the trouble cannot be rectified even after exercising the checks listted below, ask lyour nearerst PIONEER authorized service center or your dealer to carry out repair work.

Symptom	Probable Cause	Remedy
No power	• Power plug is disconnected from outlet 	• Connect plug securely into power outlet. 
	• If the power plug is connected to the switched auxiliary outlet of another component, the power is turned OFF to the other component.	• Turn on the power to the other component.
No sound	• A short pin plugs is connected to the REC, AUDIO OUT terminal. • Connection cords are disconnected from terminals, or connected incorrectly. 	• Remove short pin plug. • Connect cords securely 
	• Terminals and/or connecting cord plugs are dirty • The audio adaptor switch is set incorrectly	• Clean plugs and terminals • Set to ON when using an adaptor component, and OFF at all other times.
(For tape playback)	• Tape deck is being operated incorrectly.	• Consult the operating instructioOns for the tape deck used.
(In other cases)	• The input selector switch is not set to the playback component. • Other components are being operated incorrectly.	• Set the switch correctly. • Consult the operating instructions for the other components.
No picture	• A short pin plug is connected to the VIDEO OUT terminal. • Connection cords are disconnected from terminals, or connected incorrectly. 	• Remote short pin plug. • Connect correctly and securely.
	• Terminals and connection cord pin-plugs are dirty. • Input selector switch or video signal selector switch is not set to the playback component.	• Clean terminals and pin-plugs. • Set switches correctly. 
	• The video adaptor switch is set incorrectly. • Other components are being operated incorrectly.	• Set to ON when using an adaptor component, and OFF at all other times. • Consult the operating instructions for the other components.
No sound from one speaker.	• Connection cords are disconnected from one side. • The balance control is set too far to one side.	• Connect cords securely. • Set the control to the center position.

SPECIFICATIONS

Amplifier section

Rated output
20Hz–20kHz, 0.01% 8V
Total harmonic distoriton
20Hz–20kHz, 1V 0.002%
Intermoduration distortion
(50Hz: 7kHz = 4: 1,1V) 0.002%
Input terminals (sensitivity/impedance)
PHONO MM 2.5mV/50kΩ
PHONO MC 250μV/40Ω
125μV/3Ω
TUNER, CD, TAPE PLAY, ADAPTOR 150mV/50kΩ
Output terminals (output level/output impedance)
TAPE REC 150mV/1kΩ
PRE OUT 1V/600Ω
Frequency response
PHONO MM 20Hz–20kHz ..... ±0.2dB
TUNER, CD, AUX, 20Hz–20kHz ..... +0dB
−0.1dB
Tone control
BASS ..... ±9dB, 100Hz
TREBLE ..... ±9dB, 10kHz
Filter
LOW (SUBSONIC) 7Hz, 6dB/oct
HIGH 10kHz, 6dB/oct
MUTING ..... −20dB
SN ratio (short-circuit, A network)
PHONO MM 96dB
PHONO MC 86dB
TUNER, CD, TAPE PLAY, ADAPTOR 109dB

Video section

Video (Base Band)
Input terminals (sensitivity/impedance)
VDP, VCR1,2,3, ADAPTOR, TV TUNER
..... 1Vp-p/75Ω unbalanced
Output terminals (Output level/impedance)
VCP, VCR 1,2,3, ADAPTOR, REC MONITOR
..... 1Vp-p/75Ω unbalanced
DG 2%
DP ..... 2°
Frequency response 10 Hz–10MHz ..... +0dB
−3dB
Noise level ..... −60dB or less
Sharpness 2MHz ..... +6dB
Detail 0.5MHz ..... ±3dB
Maximum input level 2Vp-p

Power section, other

Power requirements
U.S. model ..... AC 120V, 60Hz
Other models ..... ~AC 110V/120V/220V/240V
(switchable), 50/60Hz
Power consumption
U.S. model 40W
Other models 40W
AC outlets
Power switch linked 500W
Power switch linked (×2: remote controllable)
..... 500W
External dimensions ..... 457(W) × 405(D) × 133(H)mm
18(W) × 16(D) × 5(H)in
Weight 9.7kg
(22 lb)

Accessories

Remote control unit 1
Dry cell batteries (IEC LR03 (AM-4)) 4
Templates added 2
Pin-plug cord 1
Operating Instructions 1

The specifications and appearance noted above are subject to change without notice due to improvements.

MAINTENANCE OF EXTERNAL SURFACES

- Use a polishing cloth or dry cloth to wipe off dust and dirt.
- When the surfaces are very dirty, wipe with a soft cloth dipped in some neutral cleanser diluted five or six times with water, and then wipe again with a dry cloth. Do not use furniture wax or cleaners.
- Never use thinners, benzine, insecticide sprays and other chemicals on near this unit, since these will corrode the surfaces.

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